STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

August 13, 2018

Timothy B. Hamlin
Director Office of Air and Waste
Region 10, U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 155, OAW-150
Seattle, WA 98101-3123

Dear Mr. Hamlin:

The Idaho Department of Environmental Quality (DEQ) submits the enclosed documentation for data exclusion flagging and EPA concurrence as Exceptional Events for monitored values at the Franklin Idaho $PM_{2.5}$ monitor. This monitor was affected by many wildfires in Idaho and surrounding states during the 2017 wildfire season. This documentation was prepared in accordance with requirements of the October 3, 2016 Final Rule, *Treatment of Data Influenced by Exceptional Events*, Federal Register Vol. 81, No. 191.

DEQ has flagged in AQS, the values shown in Table A of the attached documentation and their respective AQS/POC identifiers. As required, DEQ notified EPA of our intent to request exclusion of these dates on February 1, 2018 on a conference call. Based on the most recent certified data (2015–2017), the design value for the Franklin monitor is 30 micrograms per cubic meter (µg/m3) with all flagged days included. Therefore, Idaho agrees that these days do not currently have regulatory significance. However, Idaho has identified these three days for future consideration.

A public comment period was held July 5, 2018 through August 6, 2018. Several written comments were received and the response to comments is included in Section 8. Complete documentation of the public comment process is also contained in Section 8.

DEQ would appreciate your review of the enclosed documentation and notification of EPA's determination of concurrence or non-concurrence to these flagged data for use in future SIP submittals.

If you have questions or need additional information please contact Mary Anderson at (208) 373-0202, or me at (208) 373-0552. Thank you for your attention to this matter.

Sincerely,

Tiffany Floyd

Tiffany Floyd
Administrator, Air Quality Division
Idaho Department of Environmental Quality

Enclosure

cc: Gina Bonifacino, Acting EPA R10 Air Planning Unit Manager
Justin Spenillo, EPA R10
Chris Hall, EPA R10

Exceptional Events Demonstration Requesting Exclusion of $PM_{2.5}$ Monitor Values Impacted by Wildfires at Franklin, Idaho, in 2017

State of Idaho
Department of Environmental Quality

August 2018

Printed on recycled paper, DEQ, August 2018, PID EXEV, CA code 81990. Costs associated with this publication are available from the State of Idaho Department of Environmental Quality in accordance with Section 60-202, Idaho Code.

Table of Contents

List of Tables

List of Figures

Abbreviations, Acronyms, and Symbols

§	section
µg/m^3	micrograms per cubic meter
AOD	aerosol optical depth
AQI	Air Quality Index
BSMP:	Best Smoke Management Practices
CRB	crop residue burning
CFR	Code of Federal Regulation
DEQ	Idaho Department of Environmental Quality
EER	Exceptional Events Rule
EPA	United States Environmental Protection Agency
EST	Eastern Standard Time
°F	degrees Fahrenheit
GeoMAC	Geospatial Multi-Agency Coordination Group
GIS	geographic information system
GOES	Geostationary Operational Environmental Satellite
HMS	hazard mapping system
HRRR	High Resolution Rapid Refresh
ID	Idaho
IDAPA	refers to citations of Idaho administrative rules
IDEA	Infusing satellite Data into Environmental Applications
kt	knots
LMP	limited maintenance plan
mb	millibars
MODIS	moderate-resolution imaging spectroradiometer
mph	miles per hour
MT	Montana
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
OR	Oregon
PBLH	planetary boundary layer height
PDT	Pacific Daylight Time
$PM_{2.5}$	particulate matter with a diameter of less than 2.5 micrometers
PM_{10}	particulate matter with a diameter of less than 10 micrometers
RWC	Residential Wood Combustion
US	United States
VIIRS	Visible Infrared Imaging Radiometer Suite
WA	Washington
WSV NAA	West Silver Valley $PM_{2.5}$ nonattainment area
Z	Zulu time (Universal Time Coordinated or UTC time)

Executive Summary

To address high monitor values resulting from exceptional events not reasonably controllable or preventable, the U.S. Environmental Protection Agency (EPA) promulgated the Exceptional Events Rule (EER) pursuant to Section 319 of the Clean Air Act. Major changes to the 2007 EER contained in 40 CFR 50 and 51 were promulgated on October 3, 2016 (72 FR 13560) to clarify the scope of the rule; analyses, content, and organization for exceptional events demonstrations; and fire-related definitions and demonstration components.. The EER allows states to *flag* air quality data as *exceptional* and exclude those data from use in determining compliance with the National Ambient Air Quality Standards (NAAQS) if EPA concurs with the state's demonstration that it satisfies the rule requirements.

Portions of Franklin County, Idaho, were designated as the Logan UT/ID $PM_{2.5}$[1] nonattainment area (NAA) in 2009 (74 FR 58688). Although the attainment date for the Logan UT/ID $PM_{2.5}$ NAA was originally December 31, 2015, EPA granted two 1-year extensions per section 188(d) of the Clean Air Act (42 USC §7513), which resulted in a new attainment date of December 31, 2017 (82 FR 42447). Based on the most recent certified data (2015–2017), the design value for the Franklin monitor is 30 micrograms per cubic meter (µg/m^3) with all flagged days included. Therefore, Idaho agrees that these days do not currently have regulatory significance. However, Idaho has identified these three days for future consideration.

Following the EER procedures, the Idaho Department of Environmental Quality (DEQ) flagged values at the Franklin $PM_{2.5}$ monitor and is requesting concurrence that certain flagged values (Table A) are exceptional events. The flagged values at or over 35µg/m^3 affect Idaho's compliance with the 24-hour NAAQS. DEQ demonstrates in this report and requests EPA concurrence that these exceptional concentration values occurred as a result of wildfires, they were not reasonably controllable or preventable by the State of Idaho, and they fully meet the EER criteria for excluding monitor values from the data used to determine compliance with NAAQS.

Table A. Monitor values for which DEQ is requesting EPA concurrence.

Date	24-hour average $PM_{2.5}$ (µg/m^3) AQS# 16-041-0001, POC 3
09/05/2017	38.3
09/06/2017	47.0
09/07/2017	35.0

Required Elements of the Exceptional Events Rule

The EER requires that demonstrations justifying data exclusion as exceptional events must include the following:

[1] Refers to atmospheric particulate matter (PM) that has an aerodynamic diameter of 2.5 micrometers or less.

> (a) a narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);
>
> (b) a demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;
>
> (c) analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the clear causal relationship requirement;
>
> (d) a demonstration that the event was both not reasonably controllable and not reasonably preventable;
>
> (e) a demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event; and
>
> (f) documentation that the State followed the public comment process and conducted at least a 30-day comment period.

In addition, the state must submit the public comments with the demonstration and address in the demonstration those comments disputing or contradicting factual evidence provided in the demonstration (40 CFR §50.14).

This demonstration is organized by sections that address each element of the EER (Table B).

Table B. Summary of EER elements included in the demonstration.

EER Element	Section	Summary
Conceptual Model	1	The conceptual model describes the source of the event and affected region and summarizes the weather system and transport flow that brought smoke from wildfires to the Franklin monitor. Data describing wildfire emissions and monitor impacts are provided.
Clear Causal Relationship	2	Data are presented to demonstrate that the event affected air quality in such a way that there exists a clear causal relationship between the event and the exceedances: 1) Meteorological Evidence: Transport of Emissions to Monitor 2) Satellite and Back Trajectory Evidence: Spatial Relationship between Source and Monitor 3) Time Series Evidence: Temporal Description of Event Day 4) Alternative Sources
Historical Concentrations	3	Analyses are provided comparing the event-influenced concentrations at Franklin to historical concentrations.
Not Reasonably Controllable or Preventable	4	A wildfire event meets the EER for this element (40 CFR 50.14(b)(4))[2].
Human Activity Unlikely to Recur at a Particular Location or a Natural Event	5	The criterion meets the EER definition that wildfires predominantly occurring on wildland are natural events.
Mitigation	6	DEQ presents evidence of prompt public notification of the event, public education so that individuals could make behavioral changes to reduce exposure to unhealthy air, and implementation of appropriate measures to protect public health from the impacts of exceptional events.
Initial Notification	7	Demonstration of initial notification to EPA.
Public Comments	8	Documentation of the public comment process, public comments received and DEQ response to comments.

[2] 40 CFR 50.14(b)(4): "Provided the Administrator determines that there is no compelling evidence to the contrary in the record, the Administrator will determine every wildfire occurring predominantly on wildland to have met the requirements identified in paragraph (c)(3)(iv)(D) of this section regarding the not reasonably controllable or preventable criterion."

Introduction

The Idaho Department of Environmental Quality (DEQ) requests exclusion of three measured exceedances of the 24-hour $PM_{2.5}$ (particulate matter with a diameter of less than 2.5 micrometers) National Ambient Air Quality Standards (NAAQS) at Franklin, Idaho, on September 5, 6, and 7, 2017. This demonstration provides evidence and narrative satisfying all the requirements set forth in the Exceptional Events Rule (EER). The exceedances were the direct result of a wildfire event that affected air quality at the Franklin monitor. The conceptual model describes the event and how the emissions from the event led to the exceedance at the Franklin monitor. It demonstrates that a clear causal relationship exists between the event and the monitored exceedance. Historical concentrations at the Franklin monitor are compared to the exceedance concentrations to support the clear causal relationship requirement. The wildfire event was both not reasonably controllable and not reasonably preventable, and it was a natural event. DEQ provided prompt public notification of the event, provided for public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during the event, and provided for the implementation of appropriate measures to protect public health from the exceedances caused by the event. Public comments on the demonstration and DEQ's responses will be included at the end of the document following the public comment period.

1 Conceptual Model

In early September 2017, smoke from regional wildfires was transported to the Franklin monitor. A strong mid-level ridge caused the atmosphere to stagnate, keeping the smoke in place for three days. The Franklin monitor recorded exceedances of the 24-hour $PM_{2.5}$ NAAQS on September 5, 6, and 7 as a result of this event. The conceptual model describes the source of the particulate matter that impacted the monitor, the transport weather conditions that brought the aerosols to the monitor, the estimated emissions of the wildfire sources, and the timing and magnitude of the event's impact on the monitor.

1.1 Overview

Wildfires occur every year in the western United States during summer and fall. The 2017 wildfire season was, like most years, hot, dry, and smoky. Over 1.8 million acres burned in Idaho, Washington, and Oregon (Table 1) (NIFC 2017a). More than 1.3 million acres burned in Montana, and an additional 3 million acres burned in the Canadian provinces of British Columbia and Alberta (Government of British Columbia 2017; CIFFC 2017). During the first full week of September, smoke transported from many of these fires was trapped in a multiday stagnation event driven by a strong mid-level ridge pattern. Smoke accumulated during a 3-day period and negatively affected the air quality throughout the northwestern United States. The air quality monitor at Franklin, Idaho, recorded daily $PM_{2.5}$ concentrations above the 24-hour NAAQS on September 5, 6, and 7.

Table 1. Wildfire acres burned in 2017.

State/Province	Acres Burned in 2017
Washington	404,223
Oregon	714,520
Idaho	686,262
Montana	1,366,498
British Columbia, Canada	>2,965,265
Alberta, Canada	118,786

1.2 Transport Weather Conditions

During September 4–8, 2017, Idaho was under a strong mid-level ridge pattern that trapped smoke produced by and transported from multiple wildfires burning throughout the Pacific Northwest. The weather pattern affected the entire Pacific Northwest but was strongest over north central Washington and the Idaho Panhandle.

The weather system transported smoke from wildfires to the Franklin monitor and then trapped the smoke in place for several days. A mid-level ridge is known for its stagnant atmospheric characteristics due to limited transport and surface wind speeds, low mixing heights, and capped thermally driven convection due to subsidence (Whiteman 2000). Convective motion is limited, suppressing vertical mixing and typical diurnal mixing available to move smoke. A negative feedback can also occur with reduced solar radiation reaching the surface due to the opacity of smoke, further limiting the convective influences on vertical mixing. Horizontal movement is limited due to the light surface and transport winds, which further limit the range of dispersion for smoke. The winds at 20,000 feet were less than 5 knots (kt) from September 4-8 (Figure 1) which supports the lack of strong transport winds. Any smoke that was present would remain. Any transport that did occur would be from the northwest, where most of the fires were burning. Additionally, this stagnation allows for low-level complex mountain-valley wind patterns to become the driving force. Nocturnal drainage winds become the primary source of horizontal motion under this scenario.

Figure 1 A–D shows the progression of the ridge pattern at the 500 millibar (mb) level. The ridge was strongest on September 5, with height contours indicating a local high pressure of 594 dekameters centered over eastern Oregon. September 6 and 7 were similar, with the ridge remaining in place and the local high parked over the tristate boundary. By September 8, the ridge began to break as a low pressure system approached the northern California coast. This system led to increased mixing heights and stronger surface and transport winds from the southwest, which helped clear smoke out of the southern part of the region.

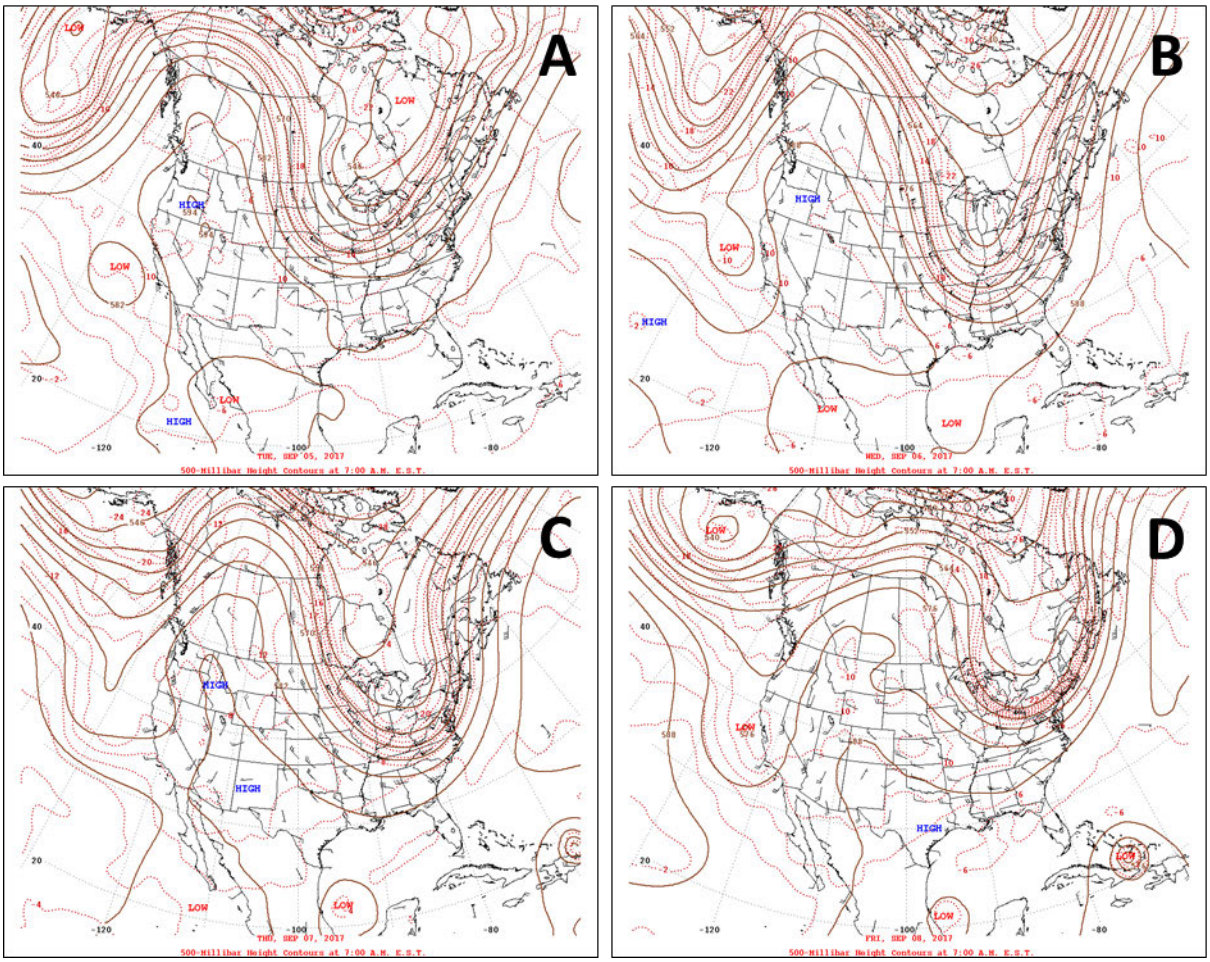

Figure 1. September 5–8, 2017, 500 mb height contours over North America showing daily progression of mid-level ridge over the Pacific Northwest: A) September 5, B) September 6, C) September 7, D) September 8 (NOAA 2017).

The strong ridge, in addition to dry conditions at the beginning of September, caused rapid fire growth that led to increased smoke production. The stagnant atmosphere trapped the smoke, and more accumulated each day the ridge was in place.

1.3 Source Area and Affected Region

The smoke originated from fires mapped in Figure 2. Each red dot represents a fire heat signature detected by satellite between September 5 and 7. Many fires were burning throughout the region, from large, scattered complexes in British Columbia to multiple conflagrations delineating the north-south spine of the Cascade Range. Many wilderness fires burned throughout the Bitterroot Mountains in Idaho, and large fires clustered in the northern Rocky Mountains in Montana.

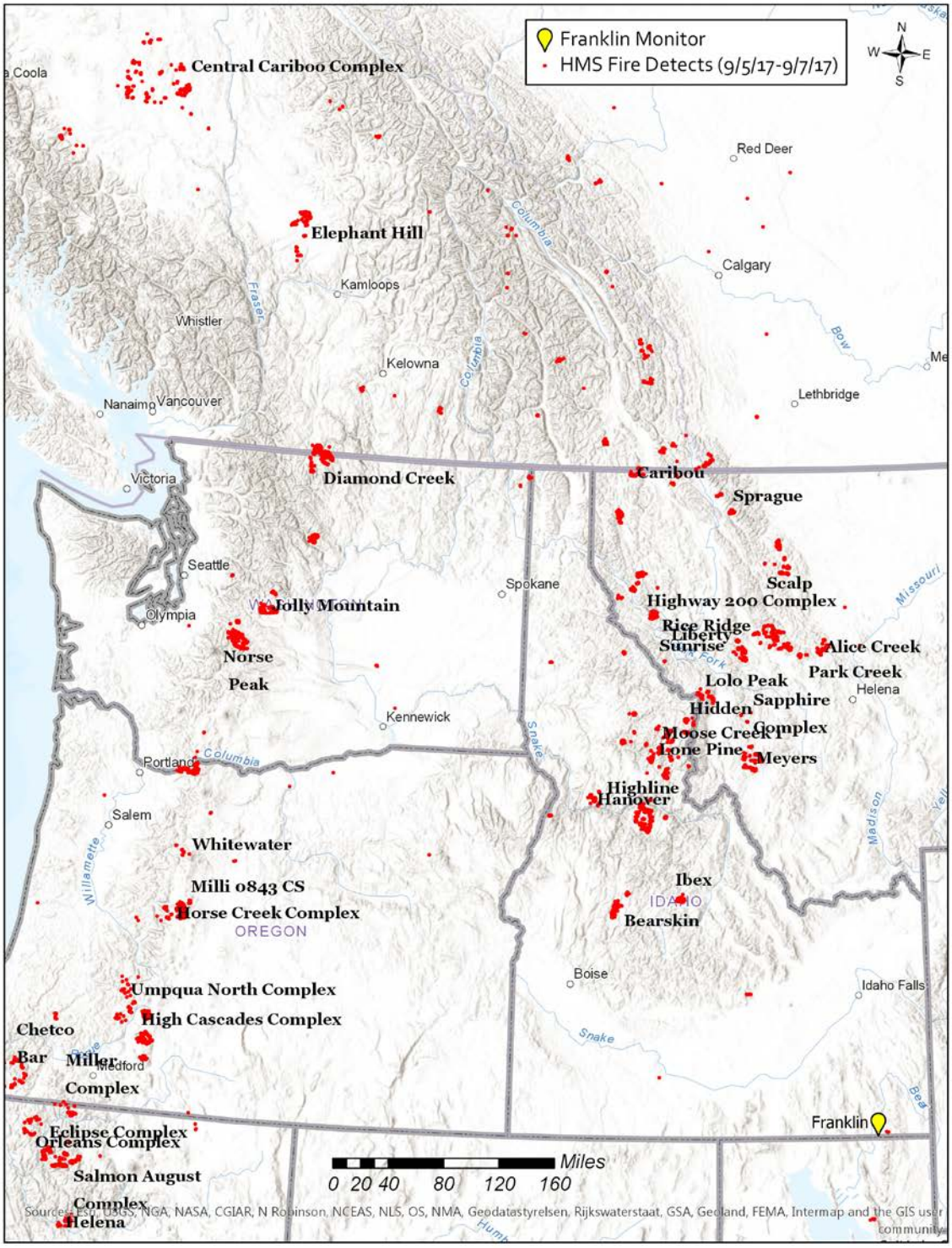

Figure 2. Fires active in the northwest during the stagnation episode, September 5–7, 2017. Significant fires and the Franklin monitor are labeled (NIFC 2017b; USFS 2018; Government of British Columbia 2017).

The presence and movement of smoke during the episode is illustrated in a series of true color satellite photos (Figure 3). On September 5, heavy smoke obscured the surface features of Washington, coastal Oregon, and western Idaho, from the Canadian border south to Boise. A swath of smoke occupied the Snake River Plain in southern Idaho, and a separate plume stretched east from Idaho Falls into Wyoming. On September 6, all three Pacific Northwest states were covered with thick smoke, as was western Montana. The image of September 7 shows a general thinning of the smoky pall in southern Idaho as geographical features emerged into view. Clouds had formed in the southern part of Oregon as a southwest wind pushed the smoke north.

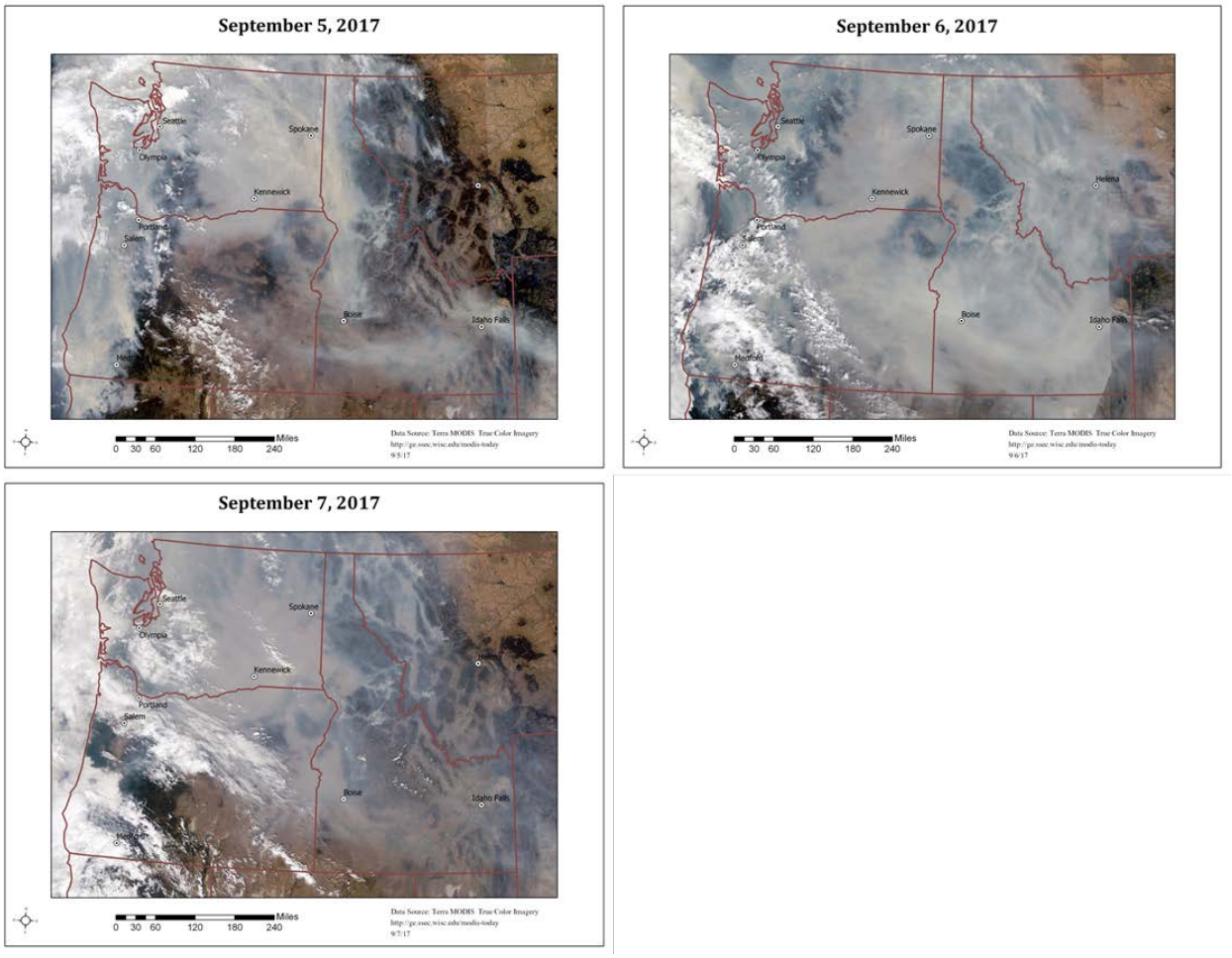

Figure 3. Moderate-resolution imaging spectroradiometer (MODIS) Terra (~11 am local time) and Aqua (~2 pm local time) satellite images of the Pacific Northwest during the September 2017 episode (NASA 2018b).

Aerosol Optical Depth (AOD) is an index of atmospheric aerosol content derived from satellite surface reflectance data. It can be used to quantify the smoke density visible in the true color satellite images. Figure 4 (A-E) plots Visible Infrared Imaging Radiometer Suite (VIIRS) AOD during each day of the stagnation episode, including the days immediately before and after the Franklin exceedance days. The figures are a spatial time series of smoke extent and thickness during the period. The dark red areas indicate AOD = 1.0 on the index. An optical thickness of less than 0.1 indicates a clean atmosphere with excellent visibility; a value of 1.0 represents an

aerosol density thick enough to obscure the sun at midday (NASA 2018a). Black areas denote clouds or extremely thick smoke that the algorithm misidentified as clouds. Inspecting the true color imagery on the same day clarifies whether it is cloud or smoke.

Figure 4A (September 4) shows thick smoke across much of the tristate area, but the large smoke plume had yet to reach Franklin. On September 5 (Figure 4B), high density smoke covered the Franklin area and the rest of the three states except for central Oregon. September 6 (Figure 4C) exhibits AOD values of 1.0 in all areas of the Pacific Northwest. On September 7 (Figure 4D), a southwest wind began pushing the aerosols northwest, illustrated by the lower AOD values in southwest Oregon. Figure 4E (September 8) shows extensive clearing in southern Idaho, Oregon, and western Washington as the mid-level ridge fully broke and a trough moved in.

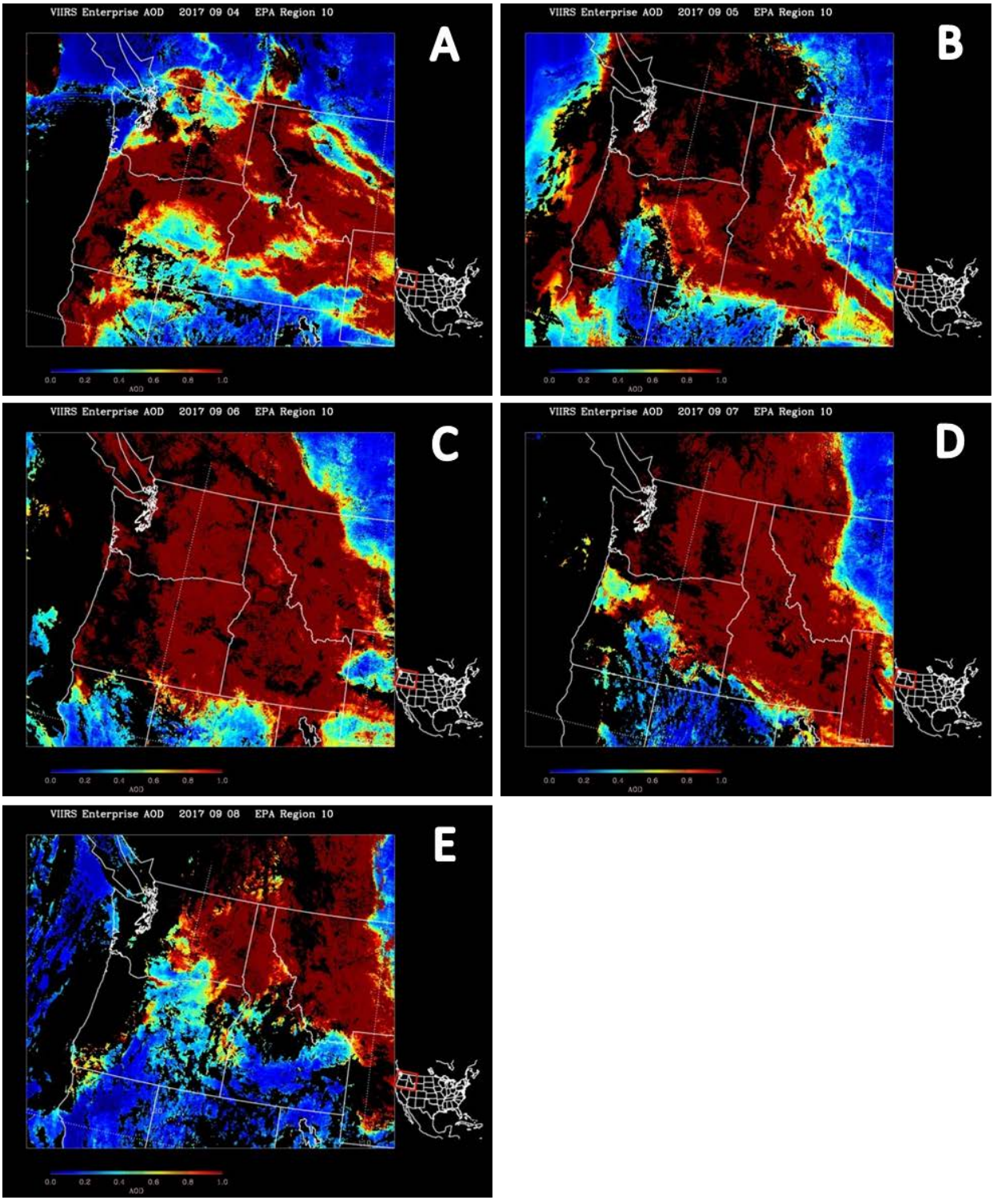

Figure 4. VIIRS Aerosol Optical Depth index values of smoke aerosols in the Pacific Northwest atmosphere during the September 2017 stagnation episode: A) September 4, B) September 5, C) September 6, D) September 7, E) September 8 (IDEA 2017). The VIIRS satellite makes daily passes at ~2 pm local time.

1.4 Emissions

Sections 1.2 and 1.3 demonstrate that heavy smoke from regional wildfires impacted the Franklin monitor on September 5, 6, and 7, 2017. Some of the smoke originated from outside Idaho's borders and some from within. To put into perspective how much $PM_{2.5}$ the wildfires produced, it is instructive to compare the 2017 wildfire emissions to normal annual $PM_{2.5}$ emissions from other sources (Figure 5). Wildfire emissions for Idaho were calculated from the Geospatial Multi-Agency Coordination Group (GeoMAC) wildland fire perimeters for 2017 (as of October 16, 2017) and from the latest methods and emissions factors available in the scientific literature (Herron-Thorpe 2017; Larkin et al. 2009; Lincoln et al. 2014; Urbanski 2014; Prichard et al. 2013; GeoMAC 2018). Other Idaho emissions sectors were obtained from the 2014 National Emissions Inventory (NEI), version 1 (EPA 2016). DEQ determined that the 2014 NEI was the best and most recent representation of non-wildfire emissions. Wildfires in Idaho produced an estimated 111,255 tons of $PM_{2.5}$ in 2017. The next closest category, nonpoint sources, produces 65,383 tons of $PM_{2.5}$ during a typical year. Prescribed fires produce the next highest amount of $PM_{2.5}$ at 19,223 tons per year. Idaho wildfires produced more $PM_{2.5}$ in 2017 than all other combined anthropogenic source categories in a typical year. In addition, a large amount of wildfire smoke advected into Idaho from neighboring states and provinces.

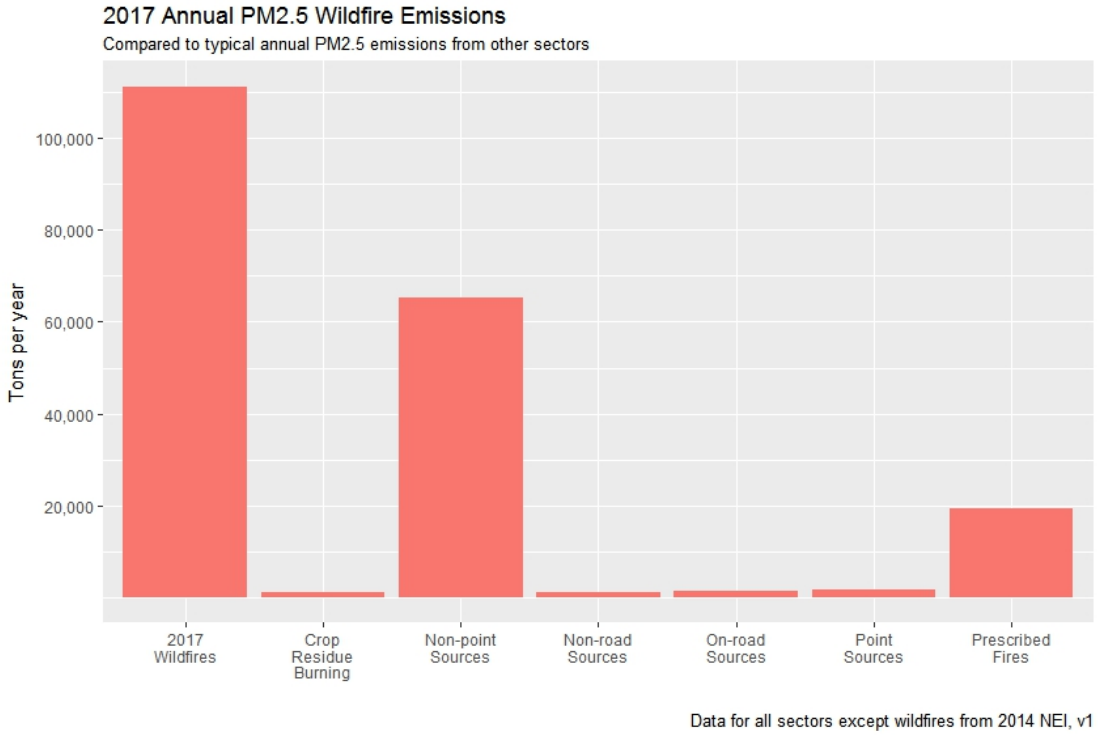

Figure 5. Idaho annual $PM_{2.5}$ wildfire emissions for 2017 compared to annual $PM_{2.5}$ emissions for other source categories from the 2014 National Emission Inventory (EPA 2016).

To further quantify the regional $PM_{2.5}$ emissions during the event period, an area of influence was selected that contained source wildfires that likely impacted the monitor (Figure 6).

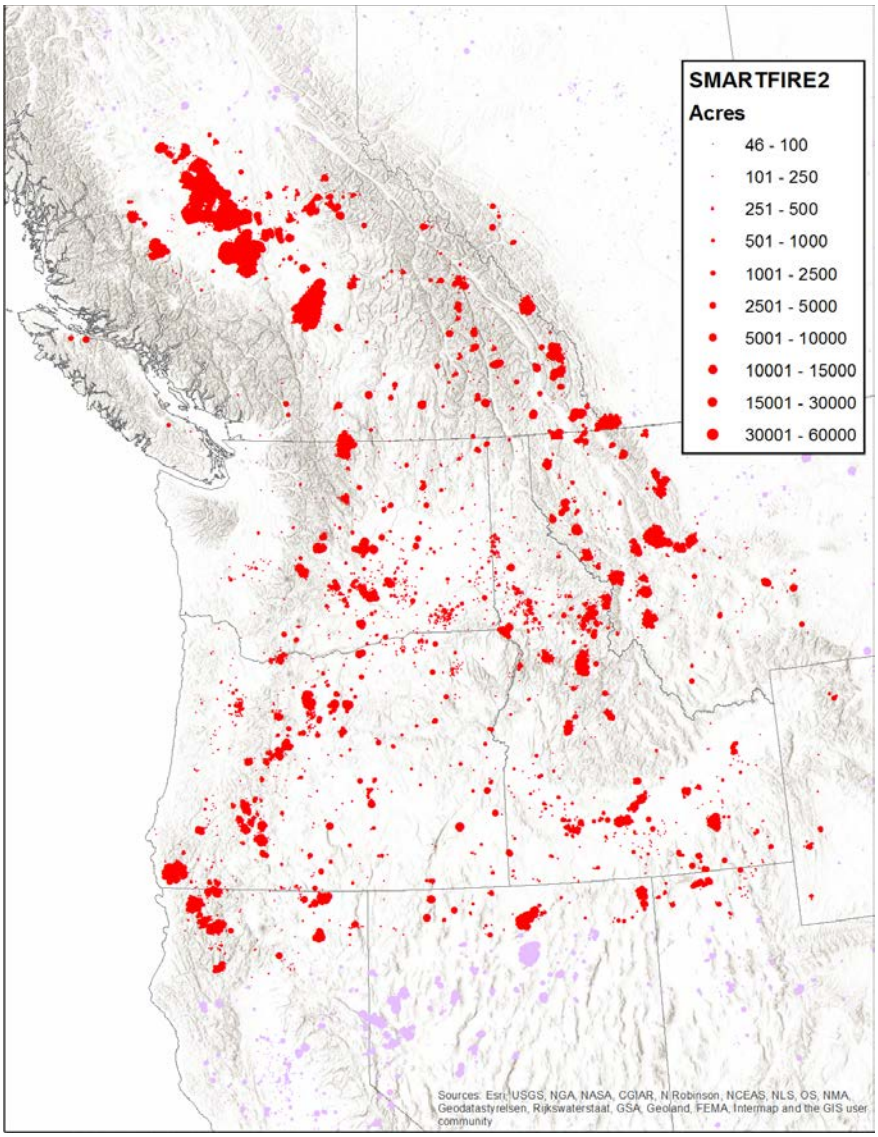

Figure 6. Area of influence containing fires that contributed $PM_{2.5}$ emissions during the 2017 wildfire season (6/1/17-9/30/17). Red dots indicate fire size by acre within the area of influence. Lilac dots are fires outside the selected area of influence.

Daily acres burned were obtained by running SMARTFIRE v2 (Herron-Thorpe, 2018). A 5-day running mean was calculated on the daily acres burned (Figure 7). A large increase in acres burned noticeably corresponds with the September episode time period, from 8/28/17 to 9/10/17.

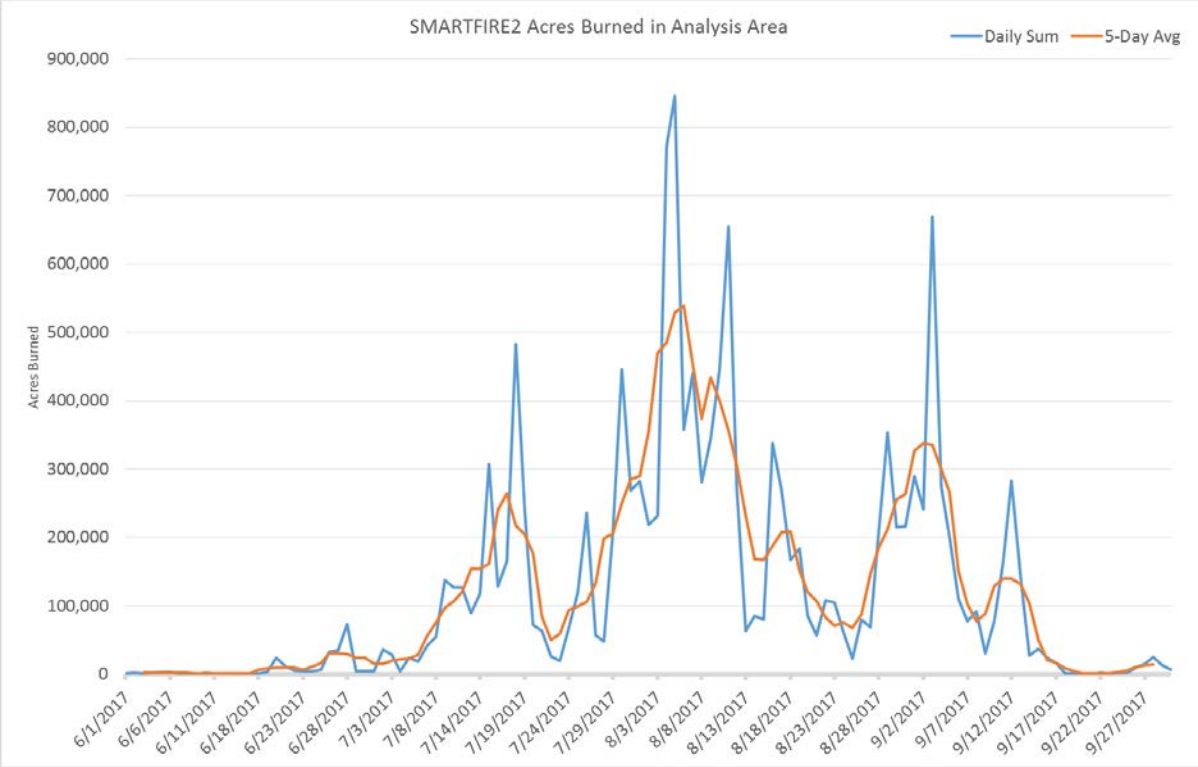

Figure 7. Daily acres burned by wildfires and prescribed burns during the 2017 wildfire season.

Daily fire emissions were estimated using BlueSky v3.5.1 for the event period plus the preceding day, 9/3/17, for Washington (WA), Oregon (OR), Idaho (ID), and Montana (MT) (Figure 8). Other emissions categories were obtained from monthly AIRPACT5 emissions summaries produced by the SMKREPORT option in the SMOKE model (*http://download.aeolus.wsu.edu:3838/emissions_summary/*). It is clear that $PM_{2.5}$ emissions from fires far outstrip $PM_{2.5}$ emissions from all other categories during the event period. $PM_{2.5}$ emissions from fires account for 99.4% of all $PM_{2.5}$ emissions from 9/3/17 to 9/18/17. Anthropogenic sources account for 0.6%. Also notable is the large surge in fire emissions that occurred on September 3, 2017. These emissions were subsequently trapped in the high pressure weather system and remained in the region until the end of the event. DEQ asserts that $PM_{2.5}$ due to fire emitted just preceding and during the event was sufficient to create the impact on the monitor that was recorded on September 5, 6, and 7.

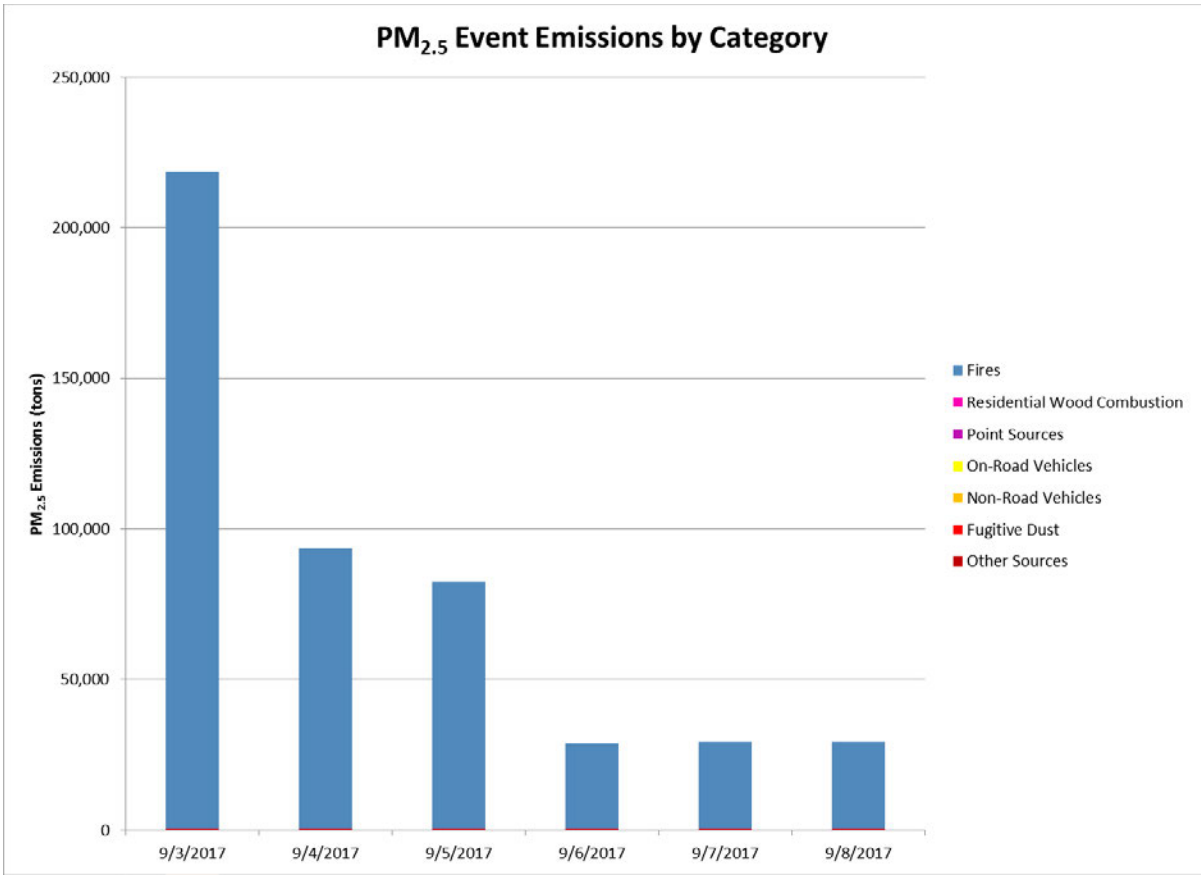

Figure 8. $PM_{2.5}$ emissions during event period for WA, OR, ID, and MT.

1.5 Monitor Impact

The widespread nature of the September episode is reflected in the spatially extensive air quality impacts on Idaho monitors. All 30 $PM_{2.5}$ monitors in the Idaho network recorded daily air quality index (AQI) values at or above the Unhealthy for Sensitive Groups category for multiple days (Figure 9). Many monitors were in the Unhealthy and Very Unhealthy categories for two or more days. If the source of the event was local to the Franklin monitor, then only that monitor would have had exceedances. However, since this was a regional event, all monitors in Idaho were impacted simultaneously.

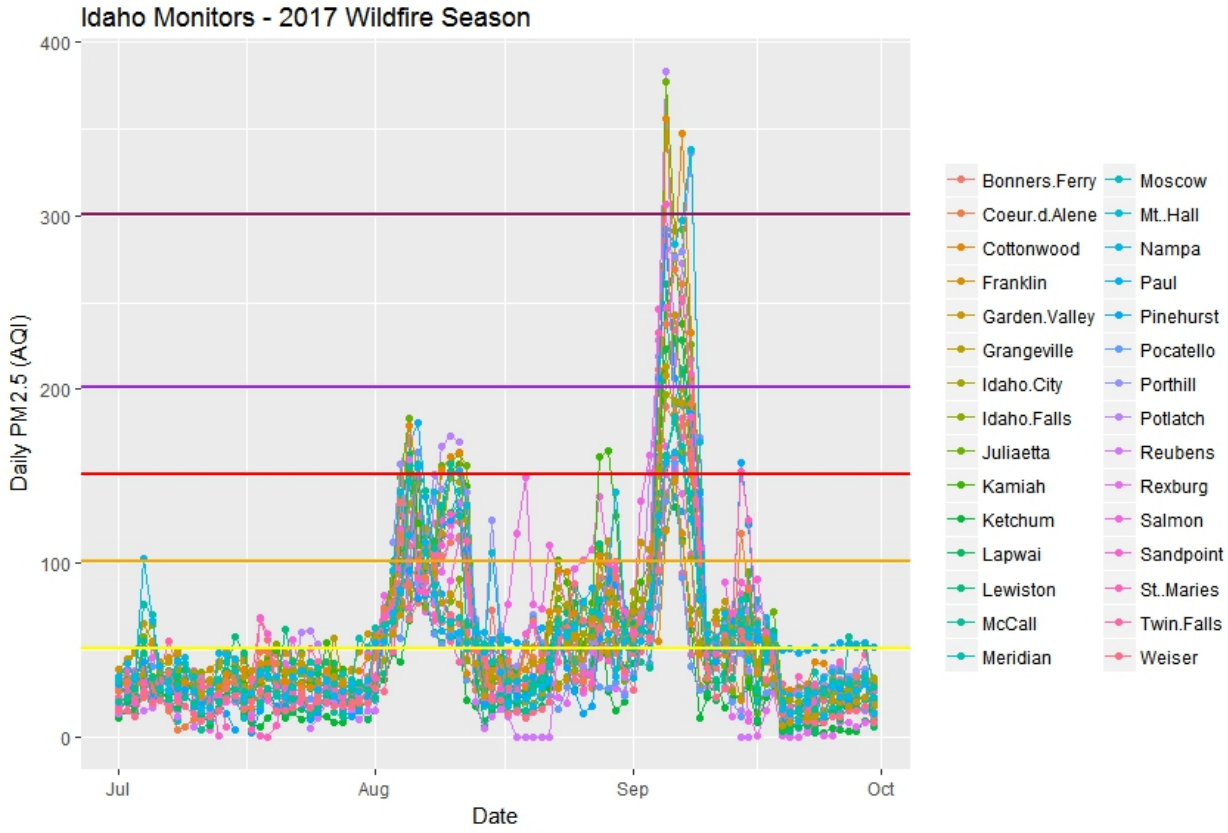

Figure 9. Daily $PM_{2.5}$ AQI values for all Idaho monitors during the 2017 wildfire season.

Concentrations at the Franklin monitor rose during the early morning hours of September 5 and remained above 35 micrograms per cubic meter ($\mu g/m^3$) until 2 p.m. on September 7 (Figure 10). Peak values occurred on September 6. When averaged, the concentrations exceeded the 24-hour NAAQS for September 5, 6, and 7.

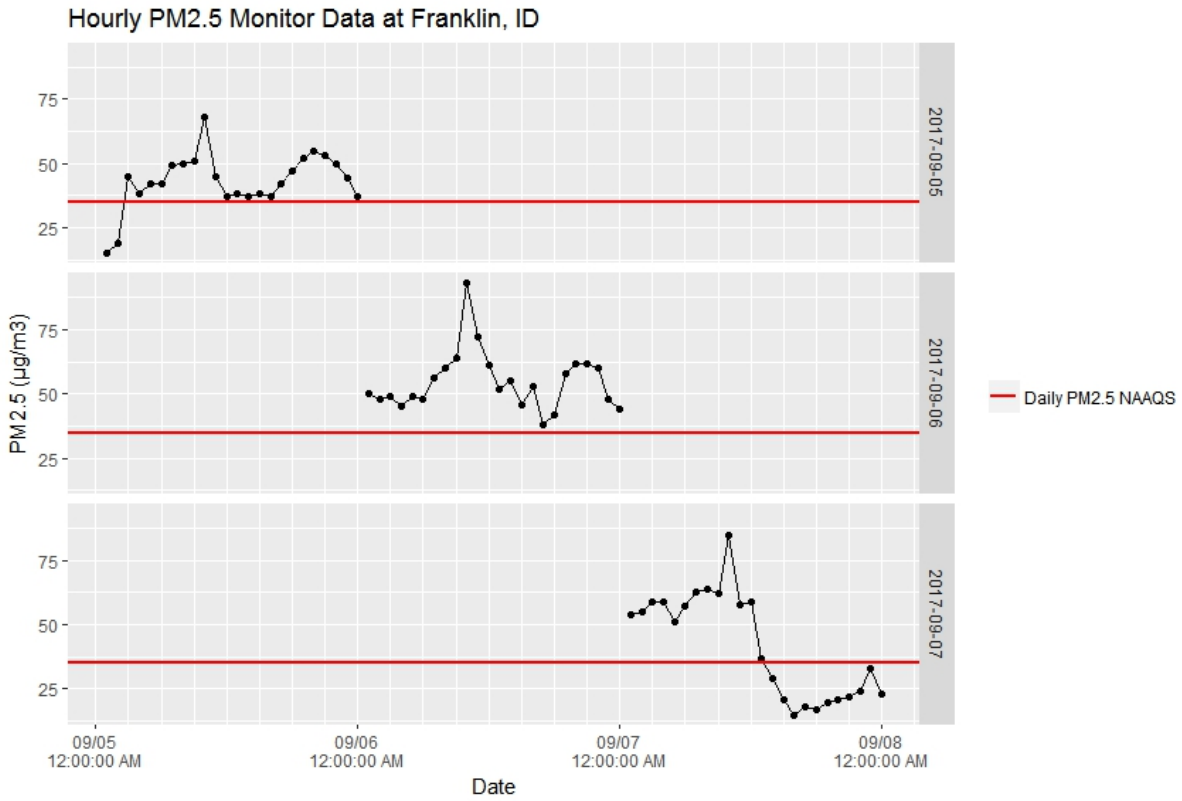

Figure 10. Time series of hourly $PM_{2.5}$ concentrations at Franklin monitor from September 5 through September 7, 2017.

1.6 Summary

In early September 2017, Idaho was impacted by an extended event that caused regional wildfire smoke to be transported to the Franklin air quality monitor. A strong mid-level ridge remained in place over the Pacific Northwest for three days, limiting the vertical mixing and horizontal movement of the atmosphere. Particulate matter produced by numerous wildfires burning throughout the Pacific Northwest impacted the Franklin $PM_{2.5}$ monitor, causing exceedances of the 24-hour NAAQS on September 5, 6, and 7. DEQ contends that this episode constitutes an Exceptional Event and requests that the US Environmental Protection Agency (EPA) exclude the data from use in determining exceedances and violations.

2 Clear Causal Relationship

A clear causal relationship between a source and monitor is demonstrated with multiple strands of evidence linking the source of the event to the monitored exceedance. DEQ provides a concise description of how the evidence for each day demonstrates the clear causal relationship. In addition, alternative sources of $PM_{2.5}$ are explored.

2.1 Sources of Evidence

For each event day, evidence demonstrates the existence of a clear causal relationship between the event and the monitored exceedance. The origins and preparation of each evidence category are described below.

2.1.1 Meteorology

Meteorological data were gathered from the online archive of the National Centers for Environmental Prediction, Weather Prediction Center (Kalnay et al. 1996; NOAA 2017). These data included continental United States surface observations and 500 mb height contours for each day of interest. The 500 mb height contours chart (Figure 1) shows height contours (solid lines, measured in dekameters above sea level), temperatures (dashed lines, degrees Celsius), and wind (arrows showing direction and speed) at the 500 mb pressure level at 0700 Eastern Standard Time (EST).

The surface charts (e.g., Figure 11) show weather station plot observations which include surface wind speed, surface wind direction, temperature, dew point temperature, observed weather, surface pressure, the latest 3-hr pressure tendency, visibility, and cloud cover. In addition, it contains the surface level isobars, local high and low pressure systems at the surface, front locations, and precipitation regions. All observations and frontal analyses are valid for 0700 EST.

Daily mean composites were generated and downloaded from the Earth System Research Laboratory, Physical Sciences Division (NOAA 2018). Daily average geopotential height at the 500 mb level was compared to the NCEP/NCAR Reanalysis climatology (1981–2010) dataset for each day of interest. Geopotential height adjusts the elevation above mean sea level by using the variation of gravity with latitude and elevation and is a function of pressure rather than geometric height.

2.1.2 Satellite and Back Trajectory

Satellite data included in the back trajectory maps are MODIS[3] Fire Detects and HMS[4] Analyzed Smoke Polygons. The fire detects compile Terra and Aqua MODIS fire and thermal anomalies data and are provided as centroids of the 1 kilometer fire detections. Geographic information system (GIS) data were downloaded from *https://fsapps.nwcg.gov/afm/gisdata.php*. Data presented on the maps are selected by date. The smoke polygons represent visible smoke

[3] Moderate-resolution imaging spectroradiometer
[4] Hazard Mapping System

delineated by National Oceanic and Atmospheric Administration analysts from GOES[5] satellite imagery. GIS data were downloaded from *http://satepsanone.nesdis.noaa.gov/FIRE/fire.html*. Data plotted on the maps are symbolized by smoke density.

Back trajectories were run in PC HYSPLIT[6], v. 4 (Stein et al. 2015). Meteorological data used in the model are from the HRRR[7] 3 kilometer Forecast Data Archive (NOAA 2016). Planetary boundary layer height (PBLH) was determined by examining the meteorological file at 0 Zulu time (Z), 6Z, 12Z and 18Z on each day. The times representing the approximate lowest and highest boundary layer heights for the 24-hour period were observed to occur at 0Z and 6Z each day. Back trajectory starting heights were then chosen to bracket the PBLH at 0.9 * 0Z PBLH (high), 0.5 * 0Z PBLH (mid), and at 0.5 * 6Z PBLH (low). Back trajectories were run for the 24-hour period ending at midnight. New trajectories started each hour and were run at the three starting heights. Trajectory output files were examined and any parts of trajectories that intersected the surface (or were subsequent to intersection with the surface) were removed (Draxler 2018). HYSPLIT trajectory output was converted to linear features and symbolized in ESRI ArcGIS Pro 2.1.

2.1.3 Time Series

Hourly $PM_{2.5}$ monitor data were obtained from EPA's Air Quality System (*https://aqs.epa.gov/aqsweb/airdata/download_files.html*). Meteorological variables were acquired from MesoWest (*http://mesowest.utah.edu/*) for the weather station at Preston Airport (DY001). The Franklin monitor does not have a collocated meteorological station, and Preston Airport is the nearest reliable source of meteorological data. All plots and calculations for time series data were performed in R, version 3.3.2.

2.2 September 5, 2017

2.2.1 Meteorological Evidence: Transport of Emissions to Monitor

Morning 500 mb wind barbs indicated speeds of less than 5 kt at around 20,000 feet from the southwest to northwest (Figure 1A). Surface readings from the Pocatello Airport indicated calm winds, reduced visibility, a completely overcast sky, and a rising station pressure becoming rapidly rising while a stationary front sat to the southwest (Figure 11). Calm winds extended from southwest Oregon, north to the Canadian border, and east to central Montana and Utah.

[5] Geostationary Operational Environmental Satellite
[6] Hybrid Single-Particle Lagrangian Integrated Trajectory
[7] High-Resolution Rapid Refresh

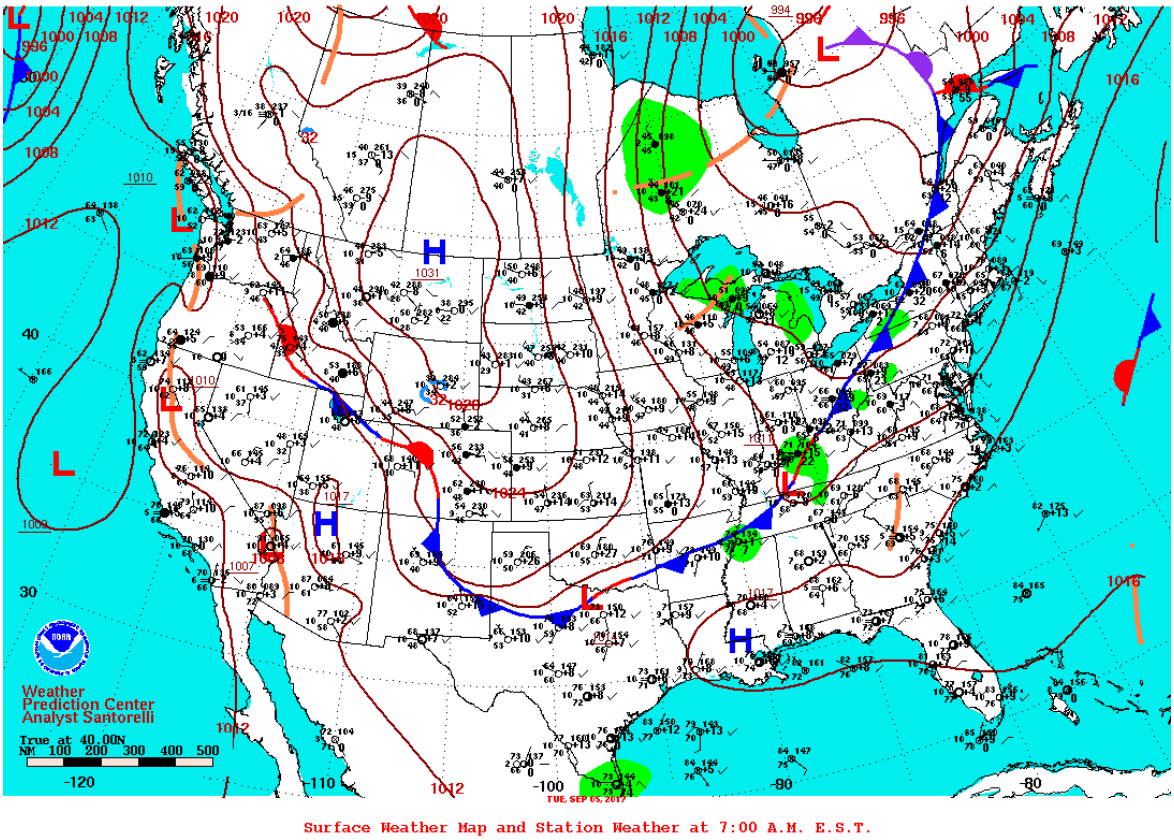

Figure 11. Surface weather map and station weather for September 5, 2017, valid at 0700 EST.

2.2.2 Satellite and Back Trajectory Evidence: Spatial Relationship between Source and Monitor

Figure 12 shows a high density smoke plume covering the entirety of Idaho, including Franklin. Back trajectories reach north and northeast towards wildfires denoted by fire detection data. The back trajectories intersect both the smoke plume and the fire detects, indicating that air parcels arriving at the Franklin monitor on September 5 carried smoke from these and other fires.

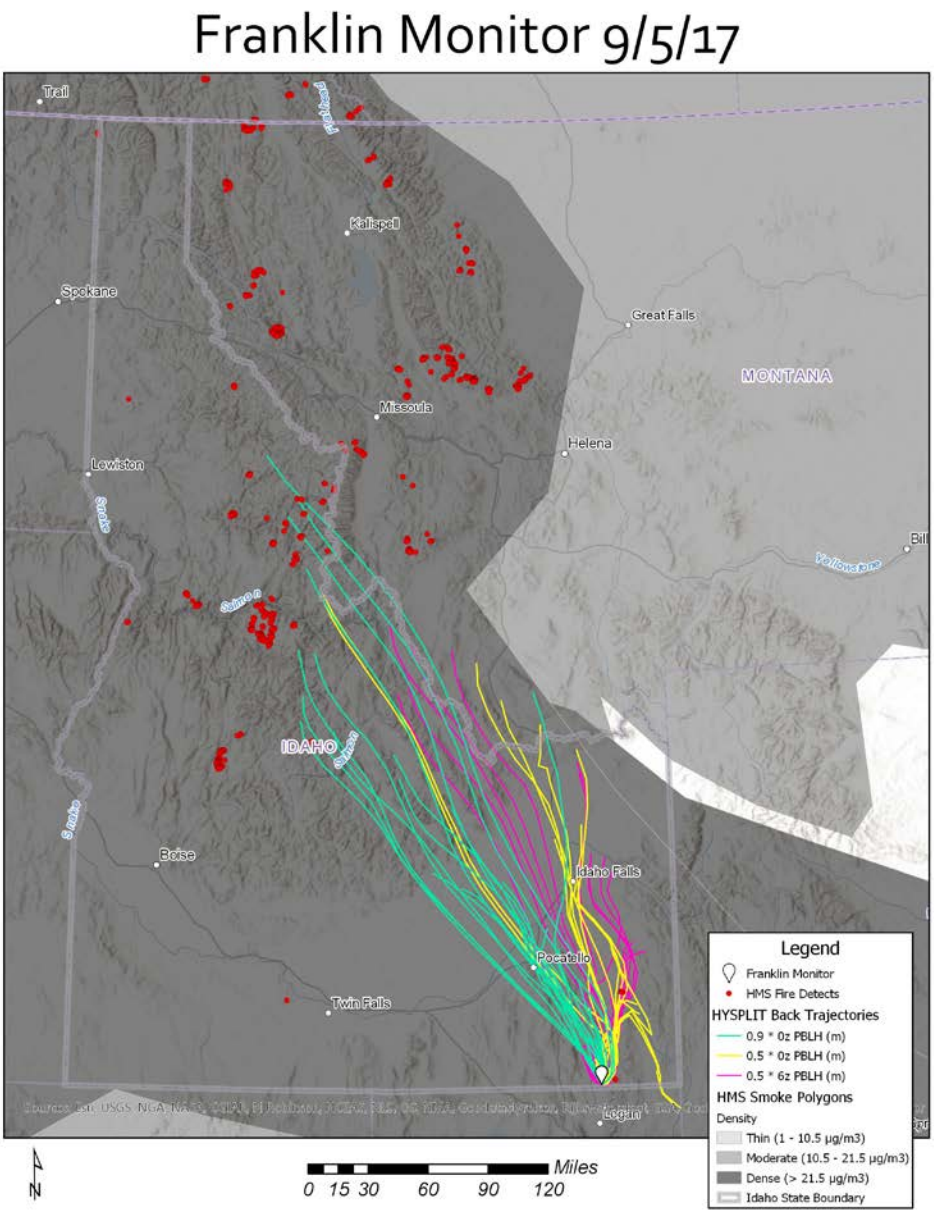

Figure 12. HYSPLIT back trajectories modeling air transport from source area to monitor during 24-hour event period on September 5, 2017.

2.2.3 Time Series Evidence: Temporal Description of Event Day

Hourly $PM_{2.5}$ concentrations at Franklin rose quickly at 3 a.m. on September 5 and remained above 35 µg/m^3 for the rest of the day (Figure 13). Concurrently, the wind speed dropped rapidly and the wind direction changed from southeasterly to northwesterly (Figure 14), corresponding with the direction of the back trajectories in Figure 12. Smoke advected from the northwest to the Franklin monitor and raised the concentration levels at the monitor. All hours on September 5 had values above the 3-year 95th percentile hourly average for September (Figure 13), which

indicates the unusual impact of the event on the monitor. Temperature and solar radiation data reveal September 5 to be a typical hot and sunny day in late summer.

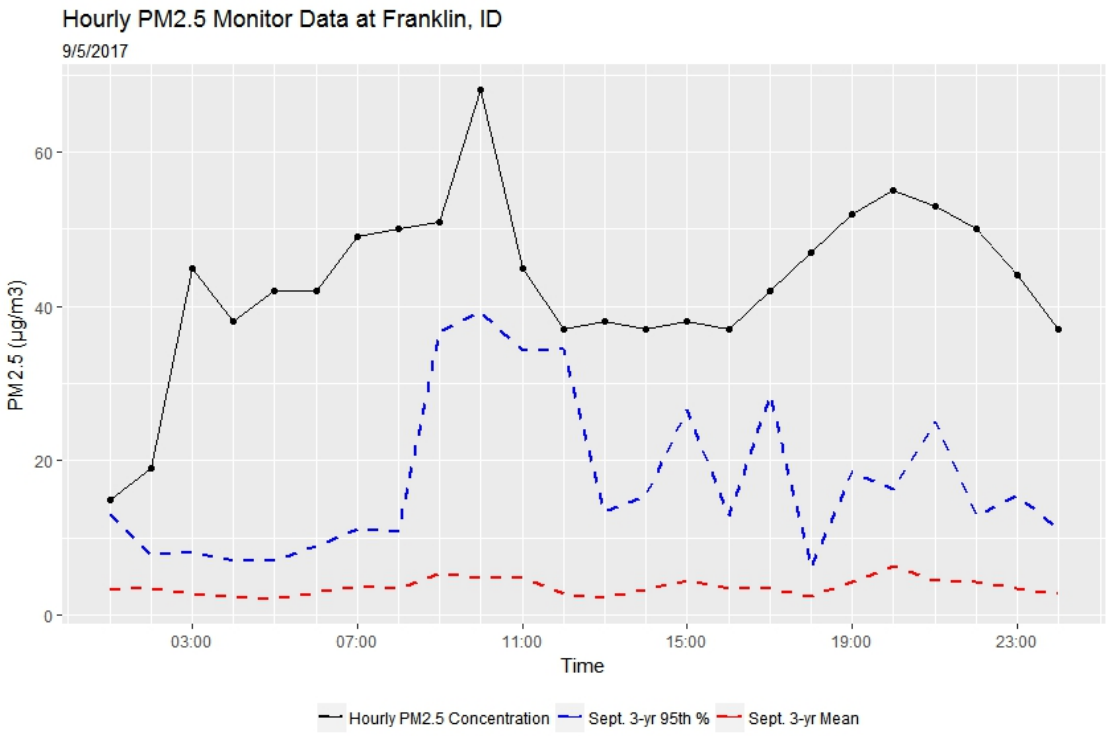

Figure 13. 24-hour time series of $PM_{2.5}$ concentration at Franklin monitor on September 5, 2017, compared to average and 95th percentile values at each hour from a 3-year historical mean.

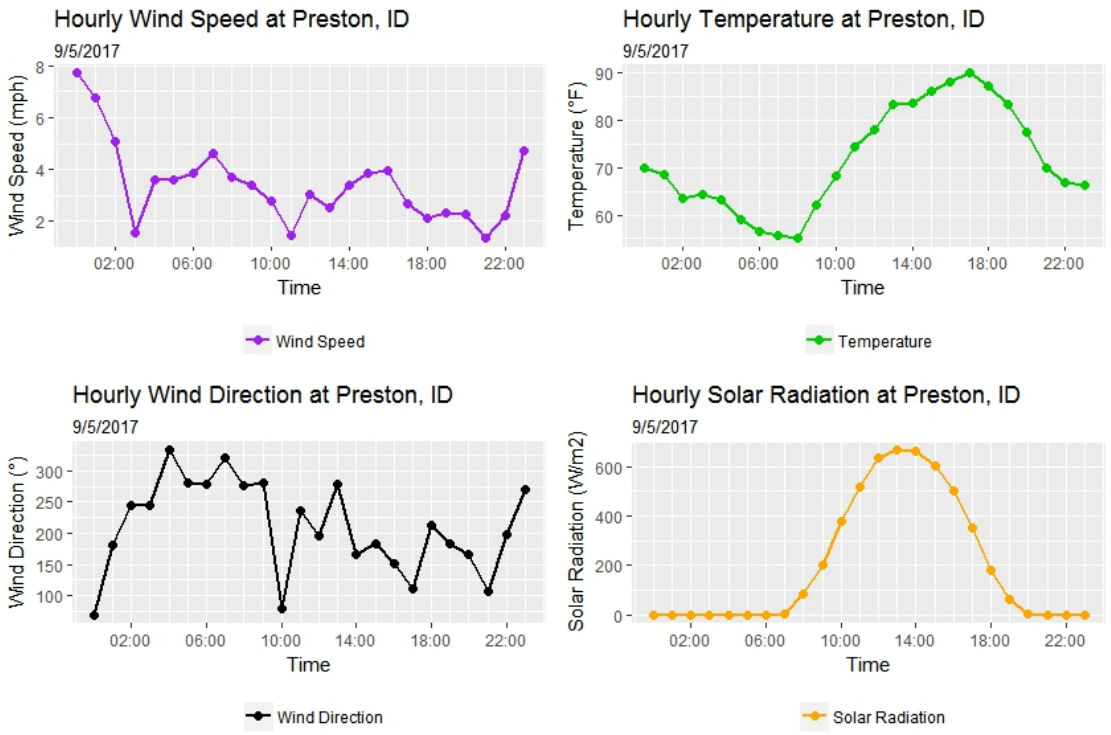

Figure 14. 24-hour time series of meteorological variables at Preston, Idaho, on September 5, 2017.

2.3 September 6, 2017

2.3.1 Meteorological Evidence: Transport of Emissions to Monitor

By September 6, the ridge axis ran through southwestern Idaho and promoted light wind speeds through the atmospheric column. Figure 1B indicates incredibly light mid-level winds at less than 5 kt at 20,000 feet over south central Idaho and at 5 kt over north central Nevada. Visibility had fallen to 4 statute miles, with calm winds at the surface and rapidly increasing pressure over the 3 hours prior to 0700 EST (Figure 15). In addition, no clouds were observed over the area at that time; visibility reduction was likely caused by surface smoke.

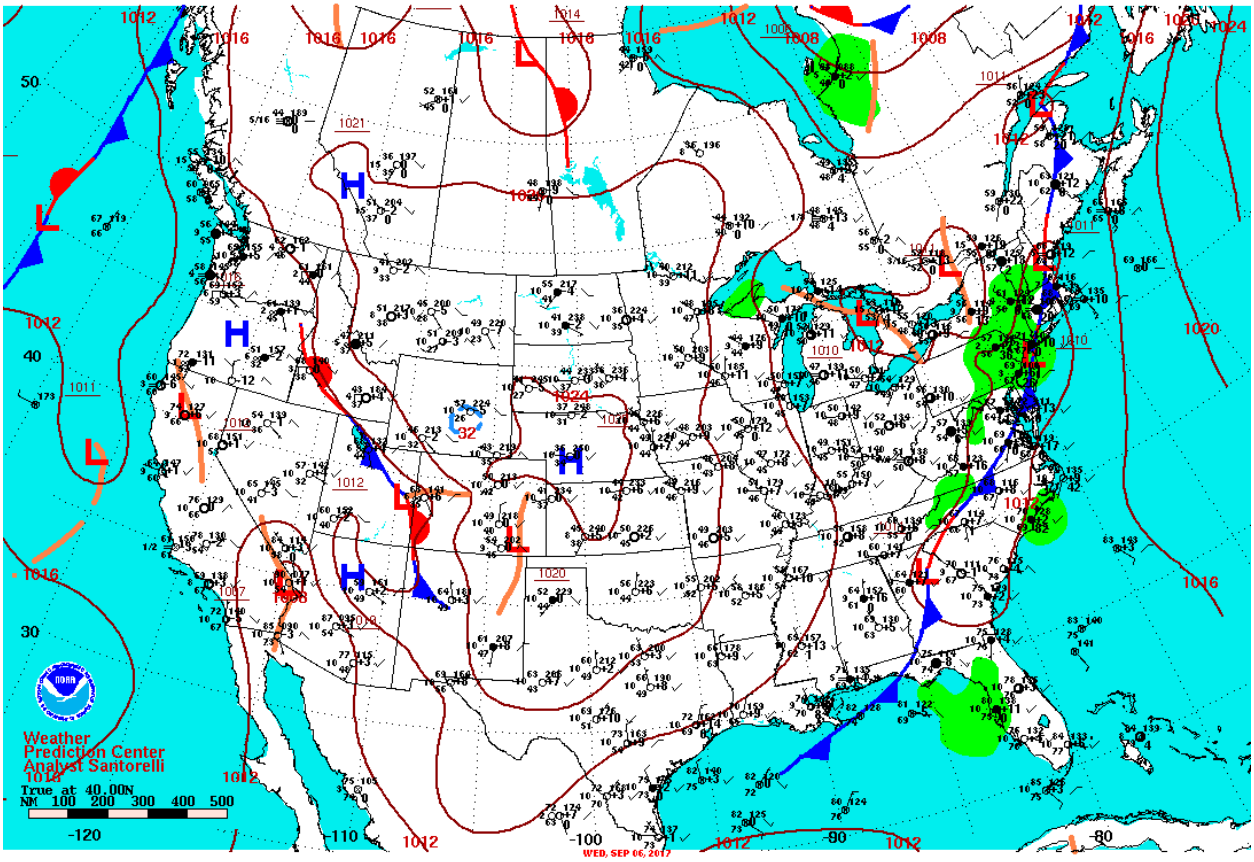

Figure 15. Surface weather map and station weather for September 6, 2017, valid at 0700 EST.

2.3.2 Satellite and Back Trajectory Evidence: Spatial Relationship between Source and Monitor

Figure 16 displays a similar day to September 5. Dense smoke covered Idaho, including Franklin, and many wildfires burned in central Idaho and northwestern Montana. Back trajectories traveled south from the fire sources, through the dense smoke, to the monitor in Franklin. Air parcels arriving at Franklin during the 24-hour period of September 6 clearly intersected smoke polygons and fire detects (Figure 16).

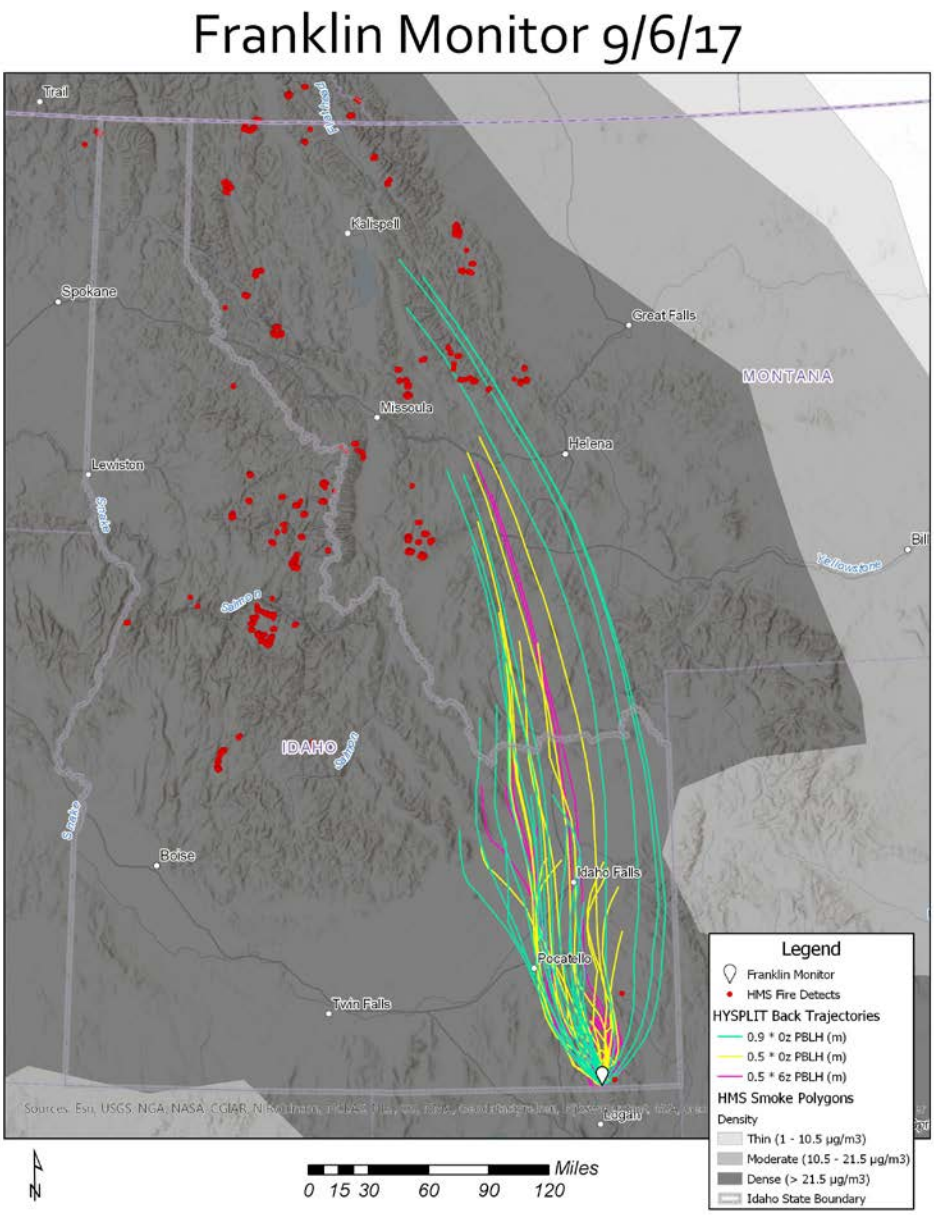

Figure 16. HYSPLIT back trajectories modeling air transport from source area to monitor during 24-hour event period on September 6, 2017.

2.3.3 Time Series Evidence: Temporal Description of Event Day

$PM_{2.5}$ concentrations on September 6 started at 50 µg/m^3, peaked above 80 µg/m^3, and once again remained above the 24-hour NAAQS of 35 µg/m^3 for the entire day (Figure 17). All hours were elevated above the 3-year average 95th percentile.

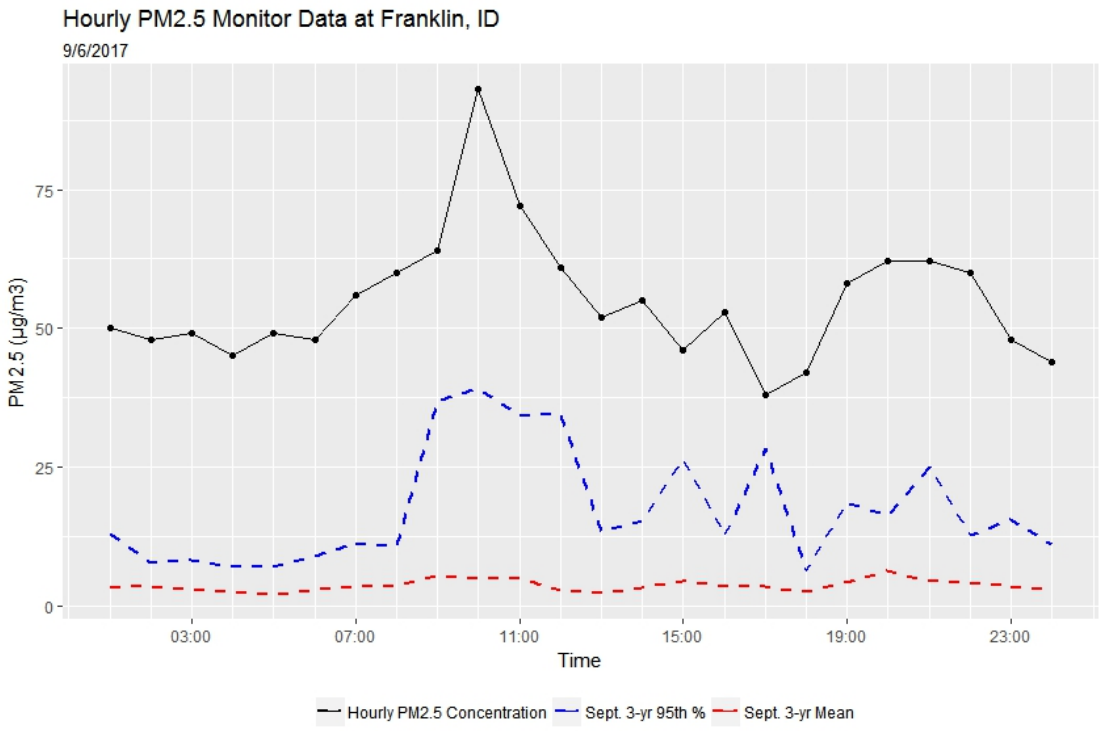

Figure 17. 24-hour time series of $PM_{2.5}$ concentration at Franklin monitor on September 6, 2017, compared to average and 95th percentile values at each hour from a 3-year historical mean.

Wind speeds were relatively low on September 6, remaining below 6 miles per hour (Figure 18). The hours before the maximum hourly concentration at 10 a.m. show the winds coming from the northwest, advecting more smoke from the source fires to the north. Temperature and solar radiation data indicate another hot and sunny day in Franklin.

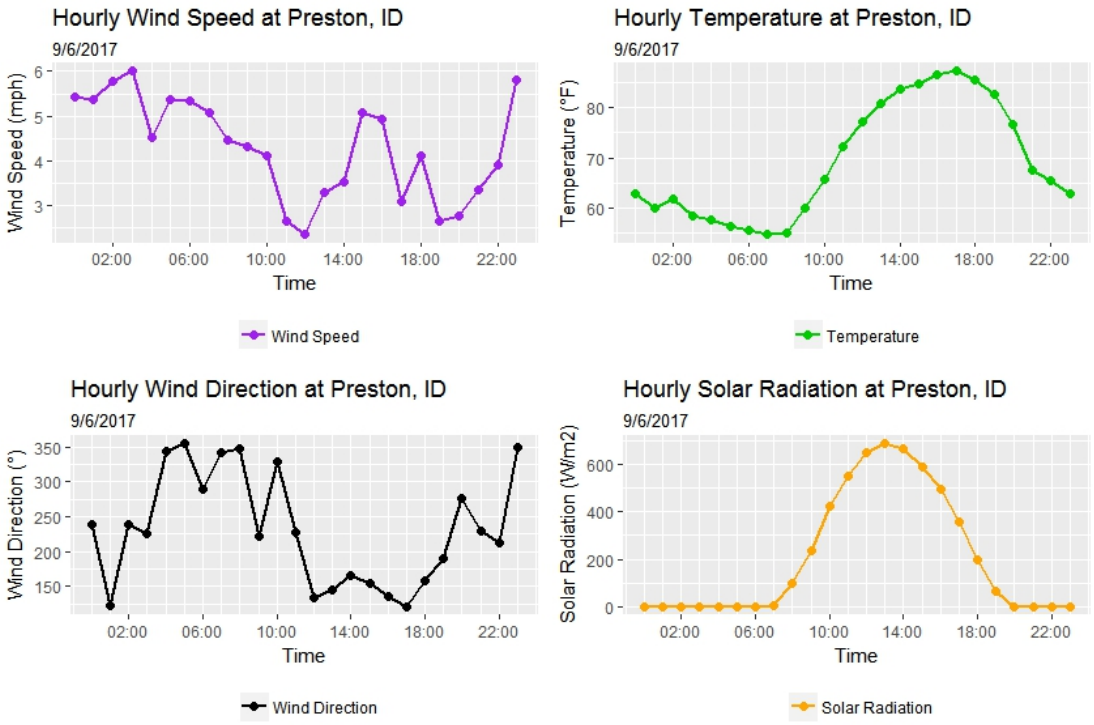

Figure 18. 24-hour time series of meteorological variables at Preston, Idaho, on September 6, 2017.

2.4 September 7, 2017

2.4.1 Meteorological Evidence: Transport of Emissions to Monitor

On September 7, the mid-level ridge axis shifted east, moving directly over the area of interest (Figure 1C). The 20,000-foot level winds were again less than 5 kt over the entire region with 10 kt winds over southwest Idaho. Light surface winds were observed (5 kt or less) from the southwest with clear skies but limited visibility (7 statute miles). As with September 6, this visibility decrease is likely due to surface smoke. Surface pressure was again on the rise. A thermal trough was located to the southwest and likely provided the steering force for the surface winds (Figure 19).

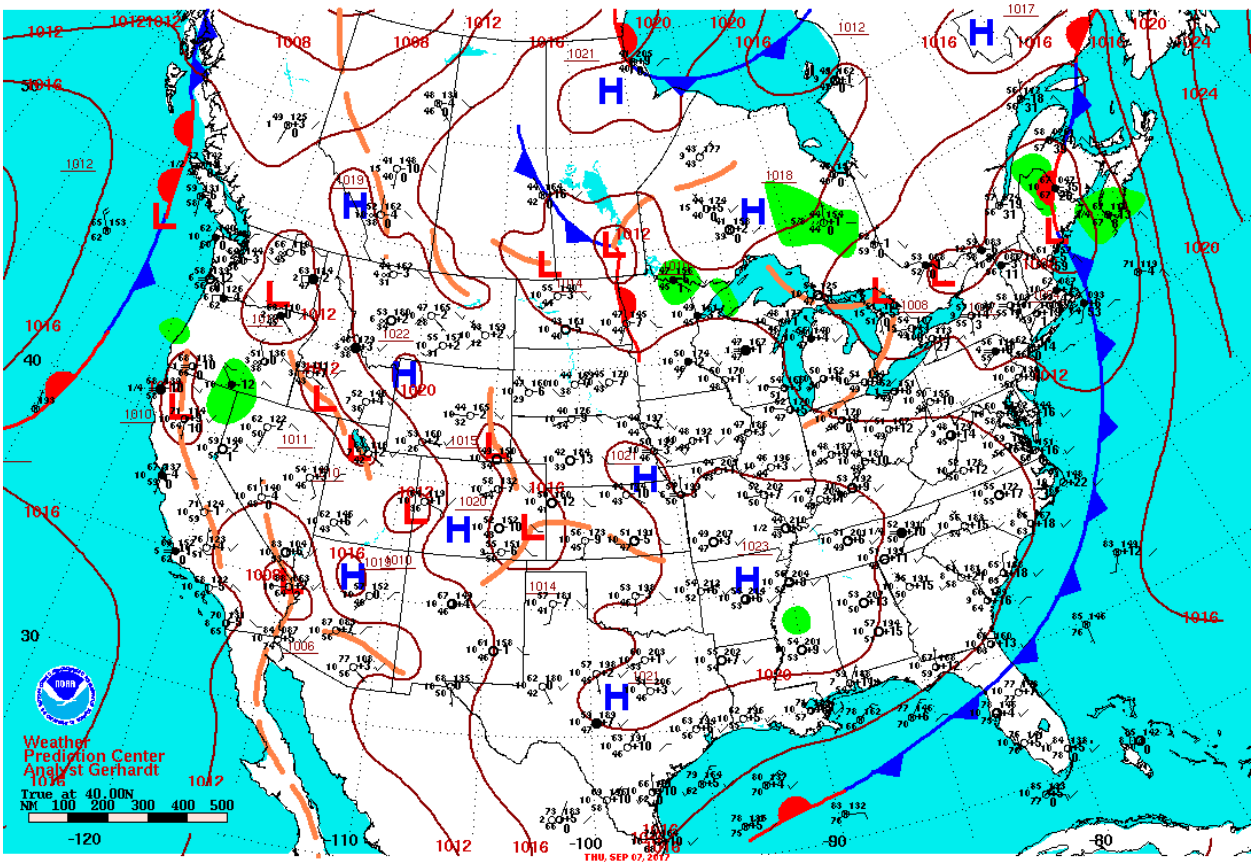

Figure 19. Surface weather map and station weather for September 7, 2017, valid at 0700 EST.

2.4.2 Satellite and Back Trajectory Evidence: Spatial Relationship between Source and Monitor

On the last day of the event, change is evident (Figure 20). The dense plume of smoke still occupied most of Idaho, including Franklin, but it had dissipated in the southwest. The back trajectories representing the higher levels of the boundary layer still intersected the dense smoke polygon, but the lower level trajectories changed direction, signifying wind shear as a new weather system arrived.

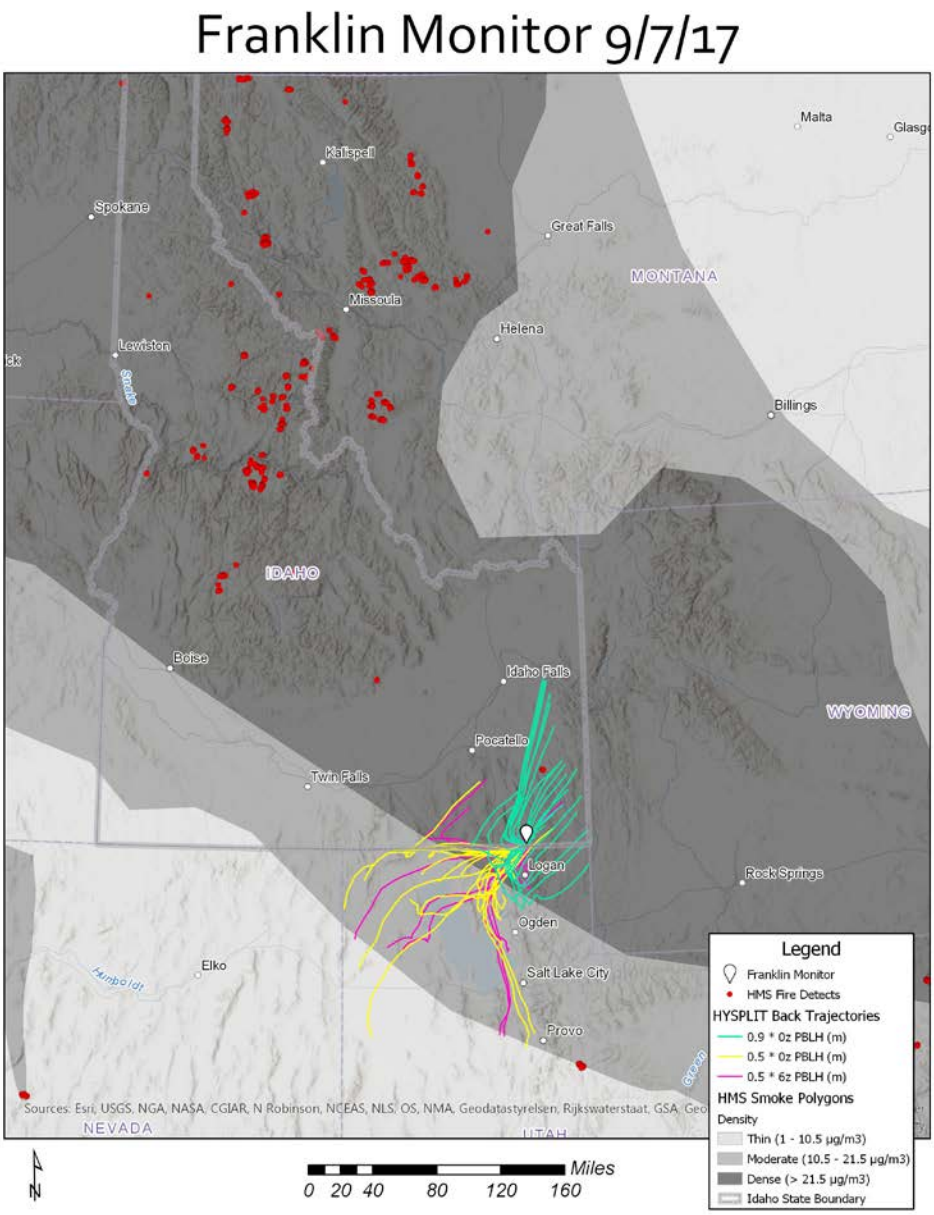

Figure 20. HYSPLIT back trajectories modeling air transport from source area to monitor during 24-hour event period on September 7, 2017.

2.4.3 Time Series Evidence: Temporal Description of Event Day

Concentrations remained high at Franklin, above 50 µg/m^3, during the morning but dropped rapidly after noon, with concentrations descending into the 3-year 95th percentile range (Figure 21). However, the concentrations in the morning remained high enough to keep the 24-hour mean above the daily NAAQS.

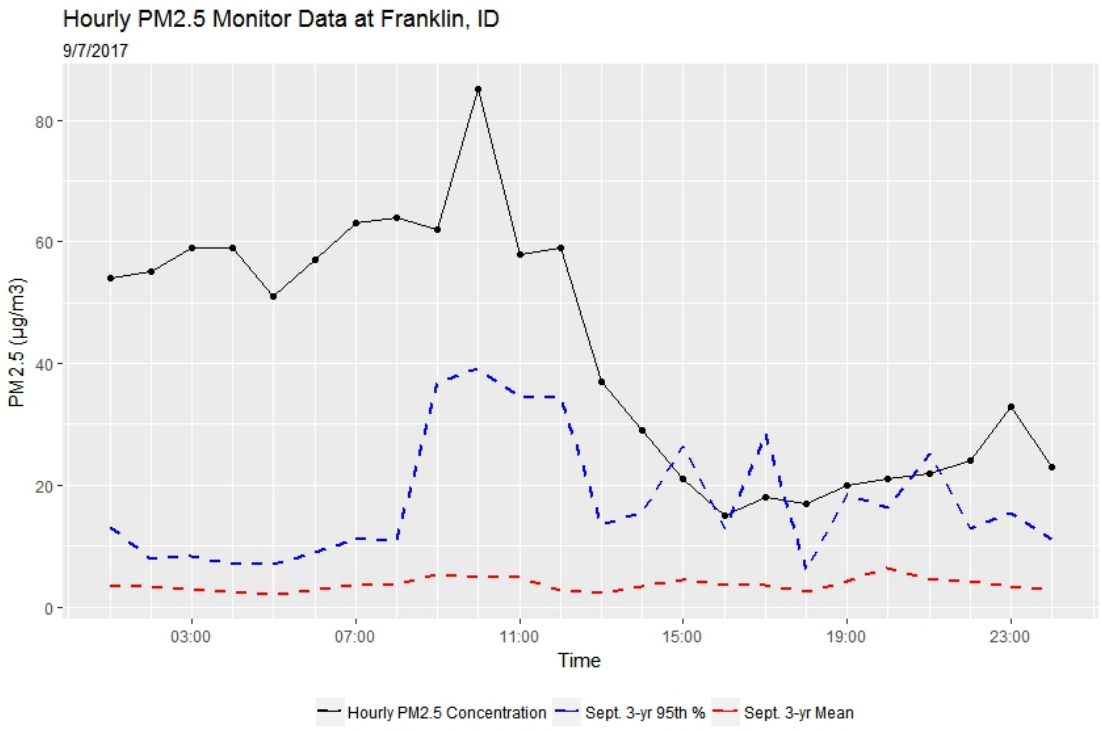

Figure 21. 24-hour time series of $PM_{2.5}$ concentration at Franklin monitor on September 6, 2017, compared to average and 95th percentile values at each hour from a 3-year historical mean.

Wind speed and wind direction shifts accompanied the drop in concentration (Figure 22). Wind speed started rising at noon and peaked at over 10 miles per hour in the afternoon. Wind direction switched abruptly to southeasterly and remained steady from that quarter for the next 8 hours. No effects on temperature or solar radiation were noted.

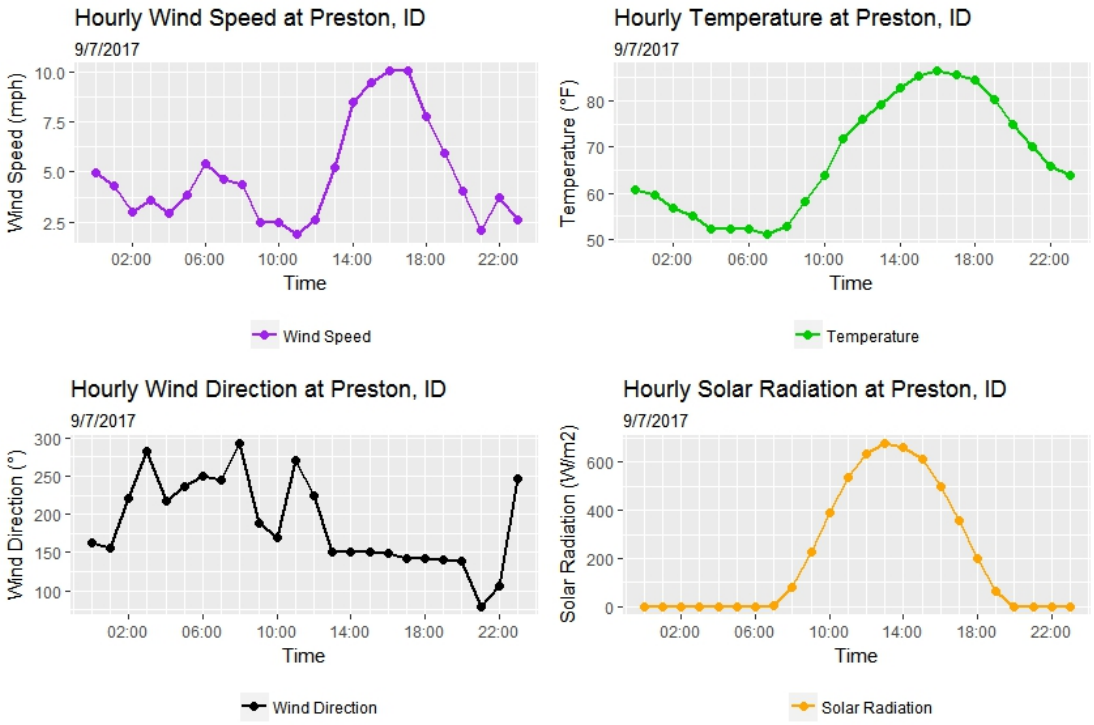

Figure 22. 24-hour time series of meteorological variables at Preston, Idaho, on September 7, 2017.

2.5 Alternative Source Hypotheses

An important element of the clear causal relationship demonstration is to explore alternative hypotheses for sources of $PM_{2.5}$. Anthropogenic sources include prescribed fires, crop residue burning (CRB), residential wood combustion (RWC), open burning, and vehicle emissions. Statewide, the magnitude of these emissions is small compared to wildfire emissions (Figure 5). These anthropogenic sources maintain relatively steady emissions from year to year and are included in the historical monitor values.

2.5.1 Prescribed Burning

Prescribed burning in Idaho is regulated under IDAPA 58.01.01.614. All federal and state prescribed burners, as well as most large private prescribed burners, are members of the Montana/Idaho Airshed Group (*www.smokemu.org*). Members follow an operating guide based on Basic Smoke Management Practices (BSMP). The group also logs prescribed burns in a database, which shows no prescribed burns occurred on September 2, 3, 4, 5, 6, or 7, 2017 (Figure 23).

CompDate	Member	Unit Name	Comment/Location	Type	T/ac	Acres	CompAcres	Tons Burned	NoBurnReason
06/29/2017	US Forest Service	AIPD 2017 Spring Pile Burns	East side of the District: Bighorn Estates and Meadow Creek areas.	Hand Piles	5	324	0	0	Not in prescription
08/26/2017	Idaho Dept of Lands	Goosey Bear	14 miles Northeast of Coolin, Idaho.	Rights of Way	15	15	0	0	Self-limited (e.g. following test fire)
09/20/2017	Idaho Dept of Lands	Lookout Below Fire HM Excavator Piles	Excavator Piles from the sale and salvage of burned timber.	Other Mechanical	9	149	5	45	

Figure 23. Extract from Montana/Idaho Airshed Group Rx burning database with dates bracketing exceptional event days.

2.5.2 Crop Residue Burning

CRB in Idaho is regulated under IDAPA 58.01.01.617. DEQ administers a CRB program that requires growers to register for a permit and obtain approval before burning (*www.deq.idaho.gov/media/1117949/crb-operating-guide.pdf*). DEQ maintains a database of approved and accomplished burns as part of the CRB program, and the records can be accessed online (*www.deq.idaho.gov/air-quality/burning/daily-crop-burn-decision/burn-requests-and-approvals/*). No CRB burns occurred in Idaho on September 2, 3, 4, 5, 6, or 7, 2017. The statewide burn decision was *No Burn Due to Air Quality*. No requests were received for CRB burning on September 2, 3, 4, 5, 6, or 7, 2017, in Franklin County.

2.5.3 Residential Wood Combustion

RWC can be a significant source of $PM_{2.5}$ emissions in Idaho communities during the winter. The temperature in Preston on September 5–7 ranged from 55 to 90°F (Figure 14, Figure 18, and Figure 22). Residential wood combustion was not a likely source of $PM_{2.5}$ emissions on September 5, 6, or 7, considering the warmth of the day and night.

2.5.4 Open Burning

All open burning in Idaho is regulated by DEQ under the "Rules for Control of Open Burning" (IDAPA 58.01.01.600). Open burning is included in the nonpoint source category of the 2014 NEI emissions for Idaho (Figure 5). Open burning is one of many sources incorporated in that category, and all of the nonpoint emissions are half the emissions produced by wildfires during 2017 (40 CFR 50.14(b)(8)(viii)(A)). It is unlikely that the magnitude of annual emissions from open burning could cause the monitor impacts sustained at Franklin on September 5, 6, and 7, 2017. An Air Quality Forecast and Caution (*http://www.deq.idaho.gov/media/60180628/stage-1-forecast-and-caution-09052017.pdf*) was issued on 9/4/17 for Benewah, Bonner, Boundary, Kootenai, Shoshone, Latah, Nez Perce, Lewis, Clearwater, and Idaho Counties. The caution was extended statewide on 9/5/17 and was rescinded on 9/9/17. All open burning is banned when an Air Quality Forecast and Caution is in effect (*http://www.deq.idaho.gov/news-archives/2017/september/air-statewide-air-quality-advisory-090517/).*

2.5.5 Vehicle Emissions

Vehicle emissions and road dust produce $PM_{2.5}$ emissions and are included in the onroad mobile source category in the 2014 NEI (Figure 5). The annual $PM_{2.5}$ emissions in this category are a small fraction of the emissions produced by wildfires, especially in rural areas like Franklin County with few vehicles. Onroad mobile emissions did not likely contribute any significant $PM_{2.5}$ to the elevated concentrations at the Franklin monitor on September 5, 6, or 7, 2017.

3 Historical Concentrations

To support the clear causal relationship requirement of the EER, analyses are presented here comparing the event-influenced concentrations at Franklin to historical concentrations. Evidence supports the conclusion that $PM_{2.5}$ concentrations at the Franklin monitor on September 5, 6, and 7, 2017, were elevated due to wildfire smoke.

In Figure 24, the $PM_{2.5}$ concentrations measured at Franklin during July through September are shown for 2007 through 2016. Data are shown only for the period spanning a typical fire season because other seasons may see elevated concentrations due to other factors like woodstove emissions or wintertime inversions. The 10-year dataset shows that most values remain below 20 µg/m^3 during the fire season, with periodic excursions up to 45 µg/m^3. One outlier from 2007, an unusually bad fire season, reached 72 µg/m^3.

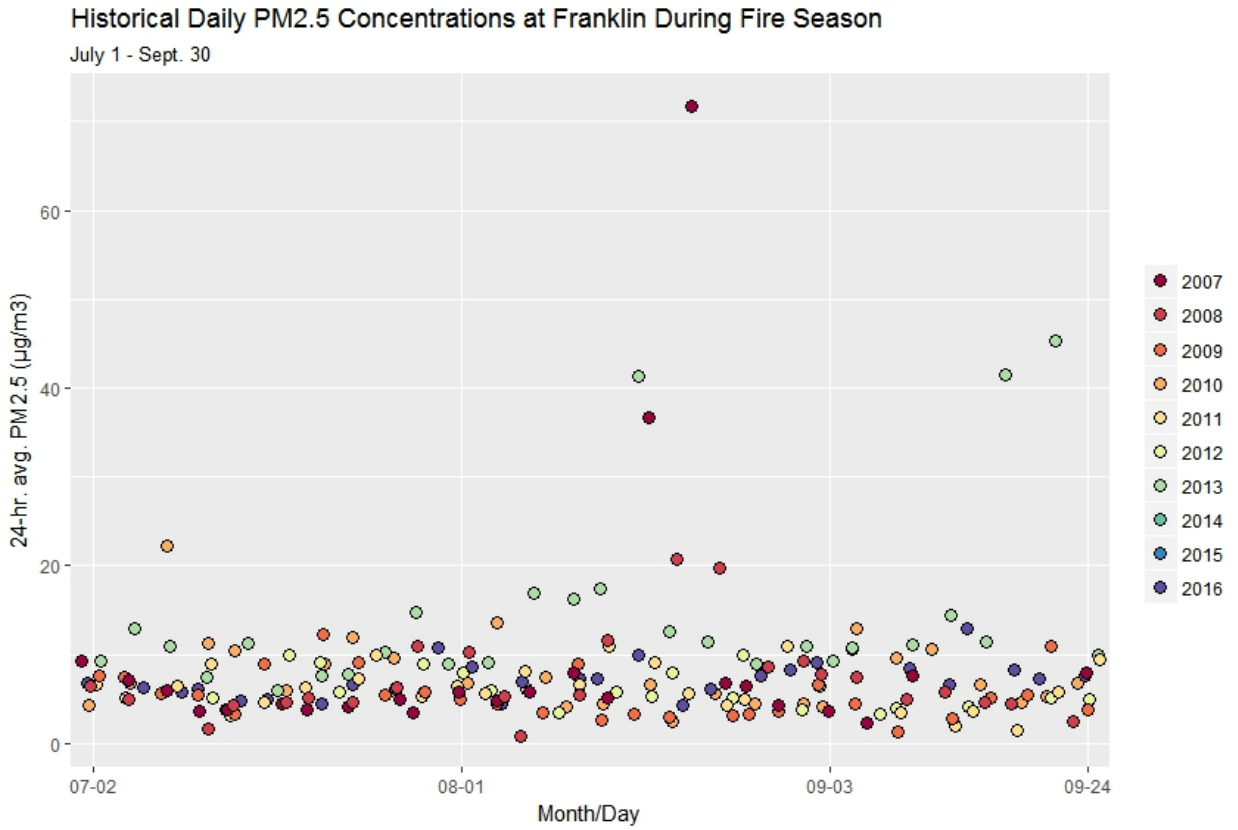

Figure 24. $PM_{2.5}$ historical concentrations at Franklin, Idaho, 2007–2016.

Table 2 presents the statistics for $PM_{2.5}$ concentrations measured during the fire season from 2007–2016 and separately for 2017. All statistics except for maximum are slightly higher for the 2017 season compared to the historical seasons. In general, the values are quite close and reflect the recurring nature of wildfires in Idaho.

Table 2. Statistics for 24-hour $PM_{2.5}$ concentrations recorded at Franklin during the wildfire season in 2007–2016 and 2017.

Statistic	2007–2016	2017
Minimum	-4.1	0.5
Maximum	71.8	47.0
Median	6.6	7.2
Mean	7.9	8.9
Standard deviation	6.4	7.9

Figure 25 shows the $PM_{2.5}$ concentrations during the 2017 fire season compared to concentrations during the historical period, 2007–2016. The 95th percentile and mean concentrations of the historical years are plotted as solid and dashed lines, respectively. Stars denote the 2017 event year concentrations. All 2017 days are well within the typical range of concentrations represented by the historical data except for three high values that occurred in early September. DEQ is requesting exclusion for these three values. Each of the requested concentrations is well above the historical 95th percentile and are within the top eight highest concentrations recorded at Franklin during the past 11 fire seasons.

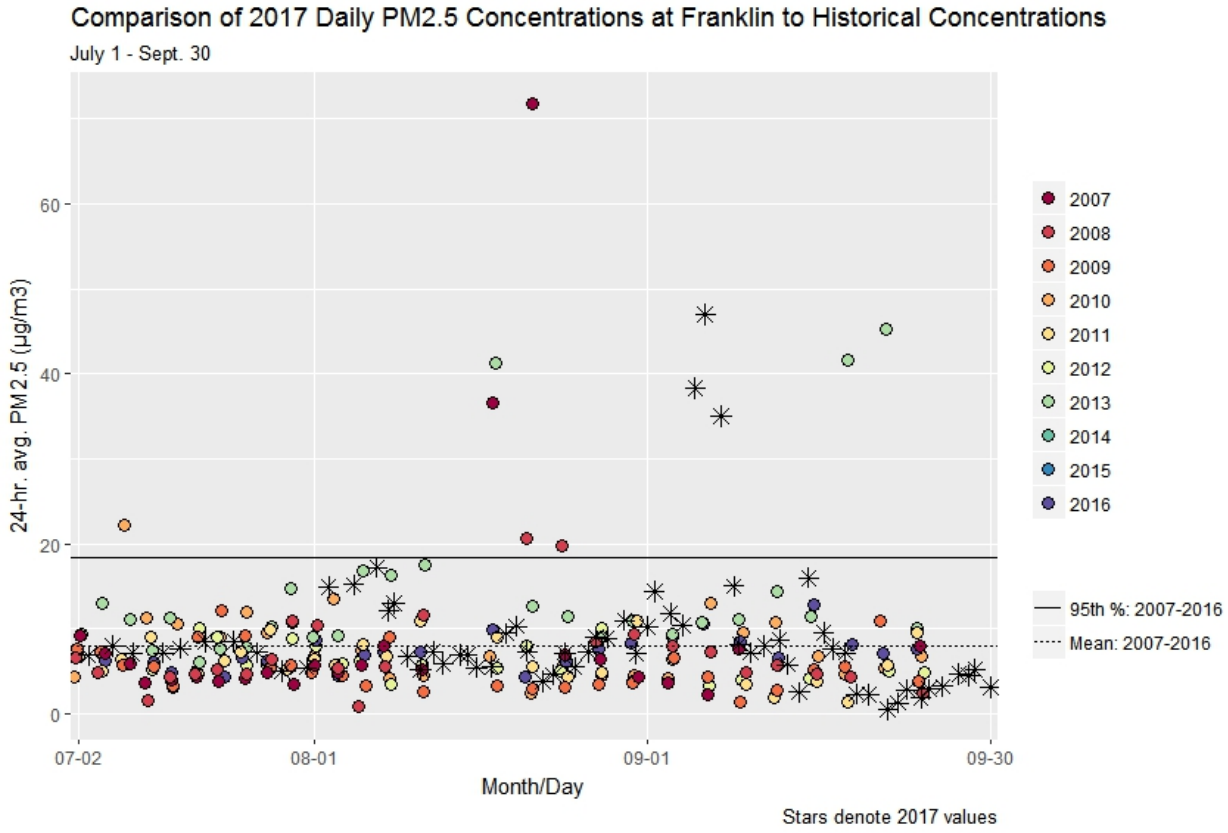

Figure 25. $PM_{2.5}$ concentrations during the 2017 wildfire season compared to previous years.

4 Not Reasonably Controllable or Preventable

The EER element requires a demonstration that the event was both not reasonably controllable and not reasonably preventable, and this requirement has been met for wildfire events (40 CFR 50.14(b)(4)). DEQ presents sufficient evidence in this demonstration showing the source of the event was indeed wildfires (section 1, section 2). DEQ contends that the event of September 5–7, 2017, at Franklin was both not reasonably controllable or preventable.

5 Human Activity Unlikely to Recur at a Particular Location or a Natural Event

This EER requires a demonstration that the event was a human activity unlikely to recur at a particular location or was a natural event. Wildfires that predominantly occur on wildland are defined in the rule as natural events. DEQ presents data in sections 1 and 2 describing the source of the event as wildfires burning in Idaho, Montana, Oregon, Washington, British Columbia, and Alberta. DEQ provides further information showing that no CRB or prescribed fires took place during the event (Figure 23, section 2.5.2). This evidence satisfies the human activity unlikely to recur at a particular location or a natural event criterion.

6 Mitigation

The EER requires states to take appropriate and reasonable actions to protect public health from exceedances or violations of the NAAQS (40 CFR 51.930). DEQ presents evidence of prompt public notification of the event, public education so that individuals could make behavioral changes to reduce exposure to unhealthy air, and implementation of appropriate measures to protect public health from the impacts of exceptional events.

DEQ's wildfire season mitigation efforts are set forth in the *Idaho Wildfire Smoke Event Response Protocol*, an internal document updated annually. The document identifies interagency coordination during wildfire events, key actions to undertake during an event, and the air quality triggers for agency actions. The protocol also outlines public outreach efforts and lists resources and references for use in public education and implementation of measures to protect public health.

6.1 Public Notification

DEQ monitors ambient air quality and provides an air quality forecast to the public daily. During significant smoke events, DEQ may deploy portable emergency $PM_{2.5}$ monitors to supplement the existing network to track air quality in communities receiving the heaviest impacts. The air quality forecast, presented as values on the AQI, provides advance notice of possible smoke movement and impact. During the wildfire season, the regular air quality forecast is supplemented with a daily wildfire smoke forecast that provides additional information on weather, smoke movement, and fire activity. DEQ also works closely with schools to provide them with up-to-date air quality information and recommendations on whether to limit or cancel recess or athletic events.

6.2 Public Education

Along with the Idaho Division of Public Health, DEQ communicates health warnings and recommendations to the public through the Idaho Smoke Blog (*http://idsmoke.blogspot.com/*). Through this public website, DEQ and the Idaho Division of Public Health inform the public of current air quality conditions with AQI maps; links to state, tribal, and federal monitoring networks; and webcams showing current conditions. For those citizens interested in the sources of smoke, an entire section of the blog provides links to federal firefighting agencies, wildfire tracking sites, and locations to view satellite data of wildfire smoke and fire detections. An additional section contains fact sheets and information about the health effects of smoke and how to reduce personal exposure.

DEQ also uses social media to notify the public when wildfire smoke impacts air quality in Idaho. Through Facebook (*https://www.facebook.com/IdahoDEQ*) and Twitter (*https://www.twitter.com/IdahoDEQ*), the agency posts air quality alerts, health, and outdoor burning information. The Daily Air Quality Reports and Forecasts webpage on DEQ's website (*http://www.deq.idaho.gov/daily-air-quality-reports-forecasts*) allows citizens to view a three-day air quality forecast, Air Quality Index values, health concerns, burning information, and special messages from regional offices on their desktop computer or mobile device. Citizens can also sign up to receive daily air quality forecast emails through EPA's EnviroFlash service.

6.3 Implementation of Measures to Protect Public Health

Based on daily monitoring of ambient air quality, DEQ determines if health standards are being or will be exceeded. The agency issues notifications to the public and news media based on our emergency rule authority. Implementing this rule requires notification of specific health messaging and triggers enforceable open burning cessation requirements. When the air quality reaches the Unhealthy for Sensitive Groups category for part of the day or is forecast to remain or deteriorate for the next 24 to 72 hours, DEQ initiates interagency conference calls with federal, tribal, and state health agencies to share information and coordinate health messaging to the public. DEQ also relies on *Wildfire Smoke: A Guide for Public Health Officials* (EPA et al. 2016) and the *Montana-Idaho Interagency Smoke Management Coordination Strategy* (BLM et al. 2015) to steer health messaging decisions.

7 Initial Notification

Figure 26 shows the email from EPA to DEQ, which provides evidence that DEQ held a call with EPA Region 10 to fulfill the Initial Notification Requirements in the EER (40 CFR 50.14(c)(2)). The email references the Cache Valley, which is another name for the Logan UT/ID NAA.

From: Spenillo, Justin <Spenillo.Justin@epa.gov> Sent: Thu 2/1/2018 1:47 PM
To: Sara Strachan; Mary Anderson
Cc: Jentgen, Matthew; Kotchenruther, Robert
Subject: Initial Notification Call - Cache and WSV 2017

Sara / Mary,

Thanks for the call today to discuss preparing Exceptional Event 2017 $PM_{2.5}$ Wildfire demonstrations for the Cache Valley and West Silver Valley nonattainment areas in Idaho. These events have regulatory significance as per the 2016 EER and our call today will serve as meeting the Initial Notification requirements (we typically refer to the annual meeting generally).

As always, we are happy to review drafts and answer questions as you develop these demonstrations.

Justin / Matt / Bob

Justin Spenillo | Fine Particulate Matter ($PM_{2.5}$)
Air Planning Unit | Office of Air and Waste
U.S. EPA Region 10 | Seattle, WA
(206) 553-6125 | spenillo.justin@epa.gov

Figure 26. Email from EPA to DEQ indicating initial notification compliance with the EER.

8 Public Comments

Proof of Publication

359687 1781959

STATE OF IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

1410 N. HILTON
BOISE ID 83706

PUBLIC NOTICE

NOTICE OF 30-DAY PUBLIC COMMENT PERIOD ON REQUEST TO EXCLUDE SEVERAL DAYS OF AIR QUALITY DATA FROM PM2.5 NAAQS CALCULATIONS FOR FRANKLIN, IDAHO.

PROPOSED ACTION: The Idaho Department of Environmental Quality (DEQ) is requesting concurrence from the US Environmental Protection Agency to exclude high concentrations of fine particulate matter (PM2.5) recorded during the 2017 wildfire season in Franklin from calculations used to designate attainment status with the National Ambient Air Quality Standard (NAAQS).

The report "Exceptional Events Demonstration Requesting Exclusion of PM2.5 Monitor Values Impacted by Wildfires at Franklin, Idaho, in 2017" demonstrates how these flagged days comply with the federal Exceptional Events Rule (40 CFR 50 and 51 [81 FR 68216]) promulgated on October 3, 2016. The rule allows states to flag air quality data as exceptional and exclude those data from use in determining compliance with the NAAQS due to events that are not reasonably controllable or preventable - pending EPA concurrence.

BACKGROUND: Portions of Franklin County, Idaho, were designated as the Logan UT/ID PM2.5 nonattainment area (NAA) in 2009 (74 FR 58688). Although the attainment date for the Logan UT/ID PM2.5 NAA was originally December 31, 2015, EPA granted two 1-year extensions per section 188(d) of the Clean Air Act (42 USC §7513), which resulted in a new attainment date of December 31, 2017 (82 FR 42447). Based on the most recent certified data (2015-2017), the Idaho portion of the NAA attains the NAAQS with all flagged days included. Idaho recognizes that these days do not currently have regulatory significance. However, Idaho has identified these three days for future consideration by EPA for exclusion.

PUBLIC COMMENT: The public comment period will last from July 5 to August 6, 2018. Questions regarding the public comment process should be directed to:

Tanya Chin, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706, tanya.chin@deq.idaho.gov, or 208-373-0440.

AVAILABILITY OF MATERIALS: The document "Exceptional Events Demonstration Requesting Exclusion of PM2.5 Monitor Values Impacted by Wildfires at Franklin, Idaho, in 2017" is available for public review on DEQ's website at http://www.deq.idaho.gov/news-public-comments-events/

Printed materials will be made available upon request at the DEQ state office.

SUBMISSION OF WRITTEN COMMENTS ASSISTANCE ON TECHNICAL QUESTIONS: Anyone may submit written comments regarding the document. To be most effective, comments should address air quality considerations and include support materials where available. All comments should be directed to Tanya Chin, Department of Environmental Quality, 1410 N Hilton, Boise, ID 83706-1255, tanya.chin@deq.idaho.gov, or 208-373-0440.

Please reference the document title listed above when sending comments or requesting information

For technical assistance on questions concerning this document, please contact Mary Anderson at (208) 373-0202 or Mary.Anderson@deq.idaho.gov.

All written comments concerning this document must be directed to and received by the undersigned on or before 5:00 p.m., MST/MDT, August 6, 2018.

DATED this 4th of July.

Tanya Chin
Air Quality Division

Published July 4, 2018 Ref. No. 1781959

AFFIDAVIT OF PUBLICATION
STATE OF IDAHO)
)SS.
County of Franklin)

Jennifer Birch
of Logan, Cache County, Utah being
first duly sworn, deposes and says:

1. That I am a citizen of the United States, and at all times hereinafter mentioned was over the age of eighteen years, and not a party to the above entitled action.
2. That I am the Principle Clerk of the Preston Citizen, a weekly newspaper published in the City of Preston, in the County of Franklin, State of Idaho; that the said newspaper is in general circulation in the said County of Franklin, and in the vicinity of Preston, and has been uninterruptedly published in said County during a period of seventy-eight consecutive weeks prior to the first publication of this notice, a copy of which is hereto attached.
3. That the notice, of which the annexed is a printed copy, was published in said newspaper 1 time(s) in the regular and entire issue of said paper, and was printed in the newspaper proper, and not in a supplement.
4. That said notice was published the following:

07/04/2018

Jennifer Birch

STATE OF UTAH)
County of Cache)

On this 3rd day of July in the year of 2018 before me a Notary Public, personally appeared. Jennifer Birch, known or identified to me to be the person whose name is subscribed to the within instrument, and being by me first duly sworn, declared that the statements therein are true, and acknowledge to me that he/she executed the same.

Laurie Jackson

Notary Public for Utah
Residing at Cache County
My Commission expires 10/18/2019

PROOF OF PUBLICATION

STATE OF IDAHO
County of Bannock

LN25398

KAREN MASON

being first duly sworn on oath deposes and says: that SHE was at all times herein mention a citizen of the United States of America more than 21 years of age, and the Principal Clerk of the Idaho State Journal, a daily newspaper, printed and published at Pocatello, Bannock County Idaho and having a general circulation therein.

That the document or notice, a true copy of which is attached, was published in the said IDAHO STATE JOURNAL, on the following dates, to-wit

July 04 2018 July 2018
July 2018 July 2018
July 2018 July 2018
July 2018 July 2018

That said paper has been continuously and uninterruptedly published in said County for a period of seventy-eight weeks prior to the publication of said notice of advertisement and is a newspaper within the meaning of the laws of Idaho.

STATE OF IDAHO
COUNTY OF BANNOCK
On this 05th. of July in the year of 2018, before me, a Notary Public, personally appeared KAREN MASON Known or identified to me to be the person whose name subscribed to the within instrument, and being by me first duly sworn declared that the statements therein are true, and acknowledge to me that he executed the same.

Notary of Public
Residing at Arimo exp 3/3/21

LORA A. SEKOT NOTARY PUBLIC STATE OF IDAHO

NOTICE OF 30-DAY PUBLIC COMMENT PERIOD ON REQUEST TO EXCLUDE SEVERAL DAYS OF AIR QUALITY DATA FROM PM2.5 NAAQS CALCULATIONS FOR FRANKLIN, IDAHO.

PROPOSED ACTION: The Idaho Department of Environmental Quality (DEQ) is requesting concurrence from the US Environmental Protection Agency to exclude high concentrations of fine particulate matter (PM2.5) recorded during the 2017 wildfire season in Franklin from calculations used to designate attainment status with the National Ambient Air Quality Standard (NAAQS).

The report "Exceptional Events Demonstration Requesting Exclusion of PM2.5 Monitor Values Impacted by Wildfires at Franklin, Idaho, in 2017" demonstrates how these flagged days comply with the federal Exceptional Events Rule (40 CFR 50 and 51 [81 FR 68216]) promulgated on October 3, 2016. The rule allows states to flag air quality data as exceptional and exclude those data from use in determining compliance with the NAAQS due to events that are not reasonably controllable or preventable pending EPA concurrence.

BACKGROUND: Portions of Franklin County, Idaho, were designated as the Logan UT/ID PM2.5 nonattainment area (NAA) in 2009 (74 FR 58688). Although the attainment date for the Logan UT/ID PM2.5 NAA was originally December 31, 2015, EPA granted two 1-year extensions per section 188(d) of the Clean Air Act (42 USC §7513), which resulted in a new attainment date of December 31, 2017 (82 FR 42447). Based on the most recent certified data (2015-2017), the Idaho portion of the NAA attains the NAAQS with all flagged days included. Idaho recognizes that these days do not currently have regulatory significance. However, Idaho has identified these three days for future consideration by EPA for exclusion.

PUBLIC COMMENT: The public comment period will last from July 5 to August 6, 2018. Questions regarding the public comment process should be directed to: Tanya Chin, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706, tanya.chin@deq.idaho.gov, or 208-373-0440.

AVAILABILITY OF MATERIALS: The document "Exceptional Events Demonstration Requesting Exclusion of PM2.5 Monitor Values Impacted by Wildfires at Franklin, Idaho, in 2017" is available for public review on DEQ's website at http://www.deq.idaho.gov/news-public-comments-events/

Printed materials will be made available upon request at the DEQ state office.

SUBMISSION OF WRITTEN COMMENTS-ASSISTANCE ON TECHNICAL QUESTIONS: Anyone may submit written comments regarding the document. To be most effective, comments should address air quality considerations and include support materials where available. All comments should be directed to Tanya Chin, Department of Environmental Quality, 1410 N Hilton, Boise, ID 83706-1255, tanya.chin@deq.idaho.gov, or 208-373-0440.

Please reference the document title listed above when sending comments or requesting information.

For technical assistance on questions concerning this document, please contact Mary Anderson at (208) 373-0202 or Mary.Anderson@deq.idaho.gov.

All written comments concerning this document must be directed to and received by the undersigned on or before 5:00 p.m., MST/MDT, August 6, 2018.

DATED this 4th of July.

Tanya Chin
Air Quality Division

July 4, 2018
LN25398

(b) (6) Public Comment, Franklin, 7/10/2018

Name:

(b) (6)

Email:

(b) (6)

Affiliation:

Comments:

Very readable document with particularly helpful graphics. A few minor comments and questions only:

DEFINITIONS, ADDITIONS:
1. BSMP, CFR, ESRI, oF, GeoMAC, HRRR, HYSPLIT, ID, MT, NCEP/NCAR, OR, UT, VIIRS, WA

DEFINITIONS, FOOTNOTE 1, INTRO 1st PARAGRAPH.
2. Revise PM2.5 definition to "atmospheric particulate matter (PM) that has an aerodynamic diameter of 2.5 micrometers or less"

EXECUTIVE SUMMARY
3. 1st paragraph: The U.S. Environmental Protection Agency (EPA) promulgated the Exceptional Events Rule (EER) pursuant to Section 319 of the Clean Air Act. Major changes to the 2007 EER contained in 40 CFR 50 and 51 were promulgated on October 3, 2016 (72 FR 13560) to clarify the scope of the rule; analyses, content, and organization for exceptional events demonstrations; and fire-related definitions and demonstration components.
4. 3rd paragraph: “EPA ence” should be “EPA concurrence”
5. Last sentence: Replace “EER rule (Table B)” with "EER (Table B)"

1 CONCEPTUAL MODEL
6. Replace “smoke in place for 3” with “smoke in place for three”

1.2 TRANSPORT WEATHER CONDITIONS
7. Replace “less than 5 kts” with “less than 5 knots (kt)”

1.4 EMMISIONS
8. Anthropogenic emissions were taken from the 2014 NEI, described as being from a “typical” year. How was it determined that this was a typical year, particularly with regard to prescribed burning emissions. Or, were NEI 2014 data used because they represent the most recent available data for these emissions?

9. Page 9, paragraph just below Figure 7. Spell out state names for WA, OR, ID, and MT.

1.5 MONITOR IMPACT
10. Replace “Very Unhealthy categories for 2 or more days” with “Very Unhealthy categories for two or more days”

2.1.1 METEOROLOGY
11. 2nd paragraph, replace “0700 Eastern Standard Time (EST)” with “0700 EST”

2.1.2 SATELLITE AND BACK TRAJECTORY
12. Define Zulu time in the second paragraph.

2.2.1 METEOROLOGICAL EVIDENCE: TRANSPORT OF EMISSIONS TO MONITOR
13. Replace “less than 5 knots (kt)” with “less than 5 kt”

2.5 ALTERNATIVE SOURCE HYPOTHESES
14. Replace “residential wood combustion” with “residential wood combustion (RWC)”

2.5.3 RESIDENTIAL WOOD COMBUSTION
15. Two instances, replace “residential wood combustion” with “RWC”

2.5.4 OPEN BURNING
16. Replace “all of nonpoint is” with “all of the nonpoint source emissions are”

3 HISTORICAL CONCENTRATIONS
17. Paragraph just below Table 2, replace “recorded during the past 11 fire seasons at Franklin” with “recorded at Franklin during the past 11 fire seasons”

4 NOT REASONABLY CONTROLLABLE OR PREVENTABLE
18. Replace “The EER element” with “This EER element”
19. Paragraph just below Table 2, replace “recorded during the past 11 fire seasons at Franklin” with “recorded at Franklin during the past 11 fire seasons”

7 INITIAL NOTIFICATION
20. The email from EPA describes discussing exceptional events for the Cache Valley and West Silver Valley NAAs in Idaho. Please clarify in the text that Cache Valley is another name for the Logan UT/ID NAA.

Thank you:

Exceptional Event Franklin Response to Comments 2017

DEQ's Response to Comments
Exceptional Events Demonstration Franklin County, ID 2017

Commenter 1 – (b) (6)		

Note. The commenter had previously pointed out a discrepancy in the outline of the exceptional event demonstration for Pinehurst. The same discrepancy also existed in this document. The outline has been fixed (Section 7 covers the Initial Notification, Public Comments and DEQ Responses are in Section 8.)

Commenter	Comment	Response
1	DEFINITIONS, ADDITIONS: 1. BSMP, CFR, ESRI, oF, GeoMAC, HRRR, HYSPLIT, ID, MT, NCEP/NCAR, OR, UT, VIIRS, WA	1. Text was revised.
1	DEFINITIONS, FOOTNOTE 1, INTRO 1st PARAGRAPH. 2. Revise PM2.5 definition to "atmospheric particulate matter (PM) that has an aerodynamic diameter of 2.5 micrometers or less"	2. Text was revised.
1	EXECUTIVE SUMMARY 3. 1st paragraph: The U.S. Environmental Protection Agency (EPA) promulgated the Exceptional Events Rule (EER) pursuant to Section 319 of the Clean Air Act. Major changes to the 2007 EER contained in 40 CFR 50 and 51 were promulgated on October 3, 2016 (72 FR 13560) to clarify the scope of the rule; analyses, content, and organization for exceptional events demonstrations; and fire-related definitions and demonstration components. 4. 3rd paragraph: "EPA ence" should be "EPA concurrence" 5. Last sentence: Replace "EER rule (Table B)" with "EER (Table B)"	3. Text was revised. 4. Text was revised. 5. Text was revised.
1	1 CONCEPTUAL MODEL 6. Replace "smoke in place for 3" with "smoke in place for three"	6. Text was revised.
1	1.2 TRANSPORT WEATHER CONDITIONS 7. Replace "less than 5 kts" with "less than 5 knots (kt)"	7. Text was revised.
1	1.4 EMMISIONS 8. Anthropogenic emissions were taken from the 2014 NEI, described as being from a "typical" year. How was it determined that this was a typical year, particularly with regard to prescribed burning emissions. Or, were NEI 2014 data used because they represent the most recent available	8. The NEI 2014 is the best and most recent data available for non-wildfires. Clarification was added to Section 1.4. 9. Text was revised.

Commenter	Comment	Response
	data for these emissions? 9. Page 9, paragraph just below Figure 7. Spell out state names for WA, OR, ID, and MT.	
1	1.5 MONITOR IMPACT 10. Replace "Very Unhealthy categories for 2 or more days" with "Very Unhealthy categories for two or more days"	10. Text was revised.
1	2.1.1 METEOROLOGY 11. 2nd paragraph, replace "0700 Eastern Standard Time (EST)" with "0700 EST"	11. Text was revised.
1	2.1.2 SATELLITE AND BACK TRAJECTORY 12. Define Zulu time in the second paragraph.	12. Text was revised.
1	2.2.1 METEOROLOGICAL EVIDENCE: TRANSPORT OF EMISSIONS TO MONITOR 13. Replace "less than 5 knots (kt)" with "less than 5 kt"	13. Text was revised.
1	2.5 ALTERNATIVE SOURCE HYPOTHESES 14. Replace "residential wood combustion" with "residential wood combustion (RWC)"	14. Text was revised.
1	2.5.3 RESIDENTIAL WOOD COMBUSTION 15. Two instances, replace "residential wood combustion" with "RWC"	15. Text was revised.
1	2.5.4 OPEN BURNING 16. Replace "all of nonpoint is" with "all of the nonpoint source emissions are"	16. Text was revised.
1	3 HISTORICAL CONCENTRATIONS 17. Paragraph just below Table 2, replace "recorded during the past 11 fire seasons at Franklin" with "recorded at Franklin during the past 11 fire seasons"	17. Text was revised.
1	4 NOT REASONABLY CONTROLLABLE OR PREVENTABLE 18. Replace "The EER element" with "This EER element" 19. Paragraph just below Table 2, replace "recorded during the past 11 fire seasons at Franklin" with "recorded at Franklin during the past 11 fire seasons"	18. Text was revised. 19. This is a duplicate comment. See comment 17.
1	7 INITIAL NOTIFICATION 20. The email from EPA describes discussing exceptional events for the Cache Valley and West Silver Valley NAAs in Idaho. Please clarify in the text that Cache Valley is another name for the Logan UT/ID NAA.	20. The clarification has been added.

References Cited

BLM, NPS, USFWS, BIA, USFS, MT DNRC, MTDEQ, and DEQ. 2015. "Montana-Idaho Interagency Smoke Management Coordination Strategy for the Mitigation of Public Health and Welfare Impacts Caused by Smoke from Wildfires." Geographic Area Coordination Centers. *https://gacc.nifc.gov/nrcc/nrcg/index/2015FINALSmokeStrategy.pdf*

CIFFC (Canadian Interagency Forest Fire Centre Inc). 2017. "National Wildland Fire Situation Report." CIFFC. *http://www.ciffc.ca/firewire/current.php*.

Draxler, R.R. 2018. AMS Short Course: "Using PC-Based HYSPLIT for Basic Trajectory and Dispersion Applications."

EPA (United States Environmental Protection Agency), USFS (United States Forest Service), US CDC (United States Centers for Disease Control and Prevention), CARB (California Air Resources Board). 2016. "Wildfire Smoke: A Guide for Public Health Officials." EPA. *https://www3.epa.gov/airnow/wildfire_may2016.pdf* .

EPA (United States Environmental Protection Agency). 2016. *2014 National Emissions Inventory, Version 1 Technical Support Document*. Research Triangle Park, NC: EPA.

GeoMAC (Geospatial Multi-Agency Coordination Group). 2018. "GeoMAC Wildland Fire Perimeters." US Geological Survey. *https://rmgsc.cr.usgs.gov/outgoing/Geomac/historic_fire_data/*

Government of British Columbia. 2017. "Wildfire Season Summary." Province of British Columbia. *https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary*

Herron-Thorpe, F.L., pers. comm. 2017. FCCS unit area fuel loadings table from BlueSky.

IDEA (Infusing satellite Data into Environmental air quality Applications). 2017. "VIIRS Enterprise AOD." NOAA Center of Satellite Applications and Research (STAR). *https://www.star.nesdis.noaa.gov/smcd/spb/aq/index.php*

Kalnay, E., M. Kanamitsu, R. Kistler, W. Collins, D. Deaven, L. Gandin, M. Iredell et al. 1996. "The NCEP/NCAR 40-Year Reanalysis Project." *Bulletin of the American Meteorological Society* 77: 437–71.

Larkin, N.K., S. O'Neill, R. Soloman, S.M. Raffuse, T.M. Strand, D.C. Sullivan, C. Krull, M. Rorig, J. Peterson, and S.A. Ferguson. 2009. "The BlueSky Smoke Modeling Framework." *International Journal of Wildland Fire* 18 (8): 906–20.

Lincoln, E., W. Hao, D.R. Weise, and T.J. Johnson. 2014. "Wildland Fire Emission Factors Database." Fort Collins, CO: Forest Service Research Data Archive.

NASA (National Aeronautics and Space Administration). 2018a. “Aerosol Optical Thickness.” NEO (NASA Earth Observations). EOS Project Science Office, NASA Goddard Space Flight Center. *https://neo.sci.gsfc.nasa.gov/view.php?datasetId=MYDAL2_M_AER_OD*

NASA (National Aeronautics and Space Administration). 2018b. “NASA MODIS Satellite Images.” University of Wisconsin-Madison. *http://ge.ssec.wisc.edu/modis-today/*

NIFC (National Interagency Fire Center). 2017a. “National Report of Wildland Fires and Acres Burned by State.” National Interagency Coordination Center. *https://www.predictiveservices.nifc.gov/intelligence/2017_statssumm/fires_acres17.pdf*

NIFC (National Interagency Fire Center). 2017b. “NIFC Lrg Fires.” National Interagency Coordination Center. *https://rmgsc.cr.usgs.gov/outgoing/GeoMAC/current_year_fire_data/current_year_all_states/*

NOAA (Nation Oceanic and Atmospheric Administration). 2018. “500mb Geopotential Height (M) Composite Anomaly.” NOAA Earth System Research Laboratory, Physical Sciences Division. *https://www.esrl.noaa.gov/psd/data/composites/day/*

NOAA (National Oceanic and Atmospheric Administration). 2016. “HRRR 3 km Forecast Data Archive.” National Centers for Environmental Prediction, NOAA Air Resources Laboratory. *https://ready.arl.noaa.gov/data/archives/hrrr/README.TXT*

NOAA (National Oceanic and Atmospheric Administration). 2017. “Daily Weather Maps.” National Centers for Environmental Prediction, Weather Prediction Center. *http://www.wpc.ncep.noaa.gov/dailywxmap/*

Prichard, S.J., D.V. Sandberg, R.D. Ottmar, E. Eberhardt, A. Andreu, P. Eagle, and K. Swedin. 2013. *Fuel Characteristic Classification System Version 3.0: Technical Documentation*. Portland, OR: US Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-887.

Stein, A.F., R.R. Draxler, G.D. Rolph, J.B. Stunder, M.D. Cohen, and F. Ngan. 2015. “NOAA’s HYSPLIT Atmospheric Transport and Dispersion Modeling System.” *Bulletin of the American Meteorological Society*. December 2015: 2059–77.

Urbanski, S. 2014. “Wildland Fire Emissions, Carbon, and Climate: Emission Factors.” *Forest Ecology and Management* 317: 51–60.

US Congress. 1970. Clean Air Act (Federal Air Pollution Prevention and Control Act). 42 USC §7513.

USFS (United States Forest Service). 2018. “MODIS Fire Detection GIS Data.” Geospatial Technology and Applications Center. *https://fsapps.nwcg.gov/afm/gisdata.php*

Whiteman, C.D. 2000. *Mountain Meteorology: Fundamentals and Applications*. New York: Oxford University Press.